

APPENDIX A
BORING LOGS

DATE BEGAN 9-20-89 BORING NO. MW-100 FIELD ENGINEER C. PETERMAN
DATE FINISHED 9-20-89 CHECKED BY J. BURDICK
GROUND SURFACE EL. 635.33' N 2017.03' E -806.68' GWL DEPTH 11.12'
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 1	3-4-- 6-9	15.0	SOFT, HIGHLY ORGANIC, DARK BROWN-TO-BLACK, SILTY SOIL, DRY	ol	HNU BACKGROUND READING IS 0.4 ppm
					3.5'		
630.0	5.0				FILL, (DARK BROWN-TO-BLACK SILT WITH COAL AND ASH, DRY) 5.6'	NA	
		S 2	3-6- 12-13	20.0	FIRM, MEDIUM BROWN, SILTY CLAY, DRY	cl	
					8.5'		
10-16-89	10.0						
		S 3	4-6- 6-8	0.0	NO RECOVERY	NA	
					13.5'		
620.0	15.0	S 4	5-6- 8-6	24.0	FIRM, BROWN, SANDY-TO-SILTY CLAY, WET	cl	
					18.5'		
	20.0						
		S 5	2-2- 2-2	24.0	VERY LOOSE, BROWN, SILTY, VERY FINE SAND, WET	sm	
610.0	25.0						
		S 6	2-3- 4-3	24.0	LOOSE, BROWN, SILTY, FINE SAND, WET		
605.33	30.0						
					BOTTOM OF BORING 30.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-100

SHEET 1 of 1

DATE BEGAN 9-19-89 BORING NO. MW-101 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-19-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 639.02' N 1985.64' E -593.92' GWL DEPTH 23.04'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	5-11- 11-11	22.0	FIRM, BROWN, SILTY CLAY, DRY LIGHT GRAY CLAY, DRY	cl	HNU BACKGROUND READING IS 0.2 ppm
	5.0				FIRM, VERY SOFT, BROWN AND LIGHT GRAY, SILTY CLAY, DRY		
		S 2	2-2- 3-1	12.0	FILL, (VERY LOOSE, BLACK, FINE COAL AND ASH, MOIST)	NA	
630.0							
	10.0						
		S 3	5-7- 10-16	21.0	FIRM, BROWN, SILTY CLAY, DRY	cl	
	15.0						
		S 4	2-4- 3-4	21.0	SOFT, BROWN, SILTY CLAY, MOIST		
620.0							
	20.0						
		S 5	6-7- 9-12	6.0	SOFT, GRAY, SILTY CLAY, MOIST	cl	
10-16-89							
	25.0						
		S 6	3-5- 8-9	9.0	MEDIUM DENSE, BROWN, POORLY SORTED SAND AND GRAVEL, WET	gm	
0.0							
	30.0						
		S 7	12-14- 16-10	11.0	MEDIUM DENSE, BROWN, POORLY SORTED, SAND AND GRAVEL, WET		
	35.0						
		S 8	12-10- 9-9	3.0	MEDIUM DENSE, BROWN, POORLY SORTED SAND, WET	sm	
599.02	40.0						

NOTES: BOTTOM OF BORING
 DRILLING CONTRACTOR BOWSER-MORNER, INC. 40.0'
 DRILLING EQUIPMENT SIMCO 4000
 DRILL CREW W. LIPE, T. CAREY
 SPLIT-SPOON SAMPLES COLLECTED BY
 STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-101

PROJECT NAME PPG - NATRIUM

SHEET 1 of 1

DATE BEGAN 9-13-89 BORING NO. MW-103 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-14-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 645.94' N -1740.73' E -172.15' GWL DEPTH 27.76'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 1	17-20 25-30	24.0	DENSE, BLACK, MEDIUM SAND WITH SOME GRAVEL, DRY	sw	
					3.5'		
640.0	5.0	S 2	6-8- 18-21	18.0	FIRM, DARK BROWN, CLAYEY SILT WITH SOME COARSE SAND, DRY		
	10.0	S 3	4-6- 8-18	12.0	FIRM, GRAYISH-BROWN, CLAYEY SILT WITH SOME COARSE SAND AND GRAVEL, DRY	gc	UNIDENTIFIED ORGANIC ODOR NOTED IN DRILL CUTTINGS FROM 8.0' TO 10.0'
630.0	15.0	S 4	13-17- 50/3	14.0	FIRM, GRAYISH-BROWN, SILTY CLAY WITH SOME MEDIUM SAND AND GRAVEL, DRY		
					18.5'		ORGANIC ODOR NOTED PREVIOUSLY EVIDENT TO 19.0'
	20.0	S 5	16-20- 21-26	18.0	DENSE, BROWN, MEDIUM-TO-COARSE SAND AND GRAVEL, DRY	sp	
					23.5'		
620.0	25.0	S 6	13-17- 18-21	18.0	DENSE, BROWN, MEDIUM SAND WITH SOME GRAVEL, DRY		
10-16-89							
	30.0	S 7	5-5- 6-10	18.0	MEDIUM DENSE, GRAYISH-BLACK, MEDIUM SAND, WET	sw	GROUNDWATER NOTED AT 30.0' DURING DRILLING
610.0	35.0	S 8	WOR*	18.0	VERY LOOSE, GRAYISH-BLACK, MEDIUM SAND, WET		
					38.5'		
	40.0					sp	

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

* WEIGHT OF RODS

PROJECT NO. 303409

BORING NO. MW-103

PROJECT NAME PPG - NATRIUM

SHEET 1 of 2

DATE BEGAN 9-19-89 BORING NO. MW-102 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-19-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 640.10' N 2268.85' E -563.54' GWL DEPTH 24.42'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	3-4- 5-10	18.0	SOFT, BROWN, SILTY CLAY, DRY		HNU BACKGROUND READING IS 5.5 ppm
	5.0						
		S 2	8-11- 12-13	19.0	FIRM, BROWN, SILTY CLAY, DRY, MOTTLED WITH SMALL PIECES OF LIGHT GRAY FLAKEY MATERIAL	cl	
630.0	10.0						
		S 3	3-5- 9-12	17.0	FIRM, BROWN, SILTY CLAY, DRY		
	15.0						
		S 4	3-4- 5-4	21.0	LOOSE, BROWN, SILTY, FINE SAND, MOIST		
620.0	20.0						
		S 5	2-3- 2-5	24.0	LOOSE, BROWN, SILTY, FINE SAND, WET	sm	
10-16-89 ▼	25.0						
		S 6	5-6- 4-7	19.0	LOOSE, BROWN, COARSE SAND AND GRAVEL, WET		
	30.0						
		S 7	5-6- 4-6	15.0	LOOSE, BROWN, SILTY, COARSE SAND AND GRAVEL, WET		
	35.0						
		S 8	9-13- 9-10	18.0	MEDIUM DENSE, BROWN, SILTY, COARSE SAND AND GRAVEL, WET	gm	
600.10	40.0						

NOTES: BOTTOM OF BORING

DRILLING CONTRACTOR BOWSER-MORNER, INC. 40.0'

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-102

PROJECT NAME PPG - NATRIUM

SHEET 1 of 1

DATE BEGAN	9-13-89	BORING NO.	MW-103	FIELD ENGINEER	D. MARCUM
DATE FINISHED	9-14-89			CHECKED BY	J. BURDICK
GROUND SURFACE EL.	645.94'	N	-1740.73'	E	-172.15'
				GWL DEPTH	27.76'
DRILLING METHOD	4 1/4" ID HOLLOW STEM AUGERS			GWL DATE	10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 9	6-12- 18-23	24.0	MEDIUM DENSE, GRAY, FINE-TO-MEDIUM SAND, WET	sp	
		S 10	9-15- 19-20	12.0	DENSE, GRAYISH-BROWN, SILTY, FINE SAND, WET	sm	
					BOTTOM OF BORING 45.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-103

SHEET 2 of 2

DATE BEGAN 9-22-89 BORING NO. MW-104 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-22-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 647.53' N -1999.33' E 39.71' GWL DEPTH 30.22'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 1	7-11- 14-11	18.0	MEDIUM DENSE, BROWN, VERY FINE SAND WITH SOME GRAVEL, DRY		
	5.0					sw	
640.0		S 2	6-7- 7-7	18.0	MEDIUM DENSE, DARK BROWN, VERY FINE SAND WITH SOME GRAVEL, DRY		
	10.0				8.5'		
		S 3	5-11- 12-12	12.0	MEDIUM DENSE, BROWN, MEDIUM SAND AND GRAVEL, MOIST	gp	
	15.0						
630.0		S 4	8-6- 6-11	8.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, MOIST		
	20.0				18.5'		
		S 5	6-6- 9-9	12.0	MEDIUM DENSE, BROWN, SILTY, FINE SAND, MOIST	sm	
	25.0				23.5'		
620.0		S 6	11-11- 14-12	16.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, MOIST	gp	
	30.0				28.5'		
3-89 ↓		S 7	11-12- 16-19	16.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND, WET	sp	GROUNDWATER NOTED AT 30.0' DURING DRILLING
	35.0				33.5'		
610.0		S 8	7-11- 12-12	18.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, WET	gp	
	40.0						

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-104

SHEET 1 of 2

DATE BEGAN 9-22-89 BORING NO. MW-104 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-22-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 647.53' N -1999.33' E 39.71' GWL DEPTH 30.22'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 9	9-17- 30-50/3	12.0	VERY DENSE, BROWN, MEDIUM SAND AND GRAVEL, WET		
602.53	45.0	S 10	12-9- 9-9	18.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, WET	gp	
					BOTTOM OF BORING 45.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-104

PROJECT NAME PPG - NATRIUM

SHEET 2 of 2

DATE BEGAN 9-14-89BORING NO. MW-105FIELD ENGINEER D. MARCUMDATE FINISHED 9-15-89GROUND SURFACE EL. 647.58'N -1728.54'E -33.71CHECKED BY J. BURDICKGWL DEPTH 29.40'DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERSGWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	4-6- 10-13	16.0	FIRM, GRAYISH-BROWN, CLAY WITH SOME SAND AND GRAVEL, DRY		
	5.0						
640.0		S 2	2-2- 3-5	6.0	SOFT, BROWN CLAY, DRY	cl	
	10.0						
		S 3	4-4- 13-13	12.0	FIRM, BROWN CLAY WITH SOME GRAVEL, DRY		
	15.0						
630.0		S 4	6-20- 28-36	18.0	HARD, BROWN CLAY, DRY DENSE, FINE-TO-MEDIUM SAND WITH GRAVEL, DRY		
	20.0						
		S 5	16-26- 32-33	17.0	VERY DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, DRY		
	25.0						
620.0		S 6	16-20- 27-30	18.0	DENSE, BROWN, FINE SAND WITH SOME GRAVEL, DRY	gm	
10-16-89							
	30.0						
		S 7	9-11- 27-28	16.0	DENSE, BROWN, FINE SAND WITH SOME GRAVEL, WET		
	35.0						
610.0		S 8	6-6- 7-10	20.0	MEDIUM DENSE, GRAYISH-BLACK, SILTY, FINE SAND, WET	sm	
	40.0						

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.DRILLING EQUIPMENT CME - 55DRILL CREW J. FALBO, L. BECHTOLSPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODSPROJECT NO. 303409BORING NO. MW-105PROJECT NAME PPG - NATRIUMSHEET 1 of 2

DATE BEGAN 9-14-89 BORING NO. MW-105 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-15-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 647.58' N -1728.54' E -33.71 GWL DEPTH 29.40'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 9	8-10- 15-18	17.0	MEDIUM DENSE, BLACK, SILTY, FINE SAND, WET	sm	UNIDENTIFIED ORGANIC ODOR NOTED ON SPLIT- SPOON SAMPLES
602.58	45.0	S 10	4-10- 10-10	18.0	MEDIUM DENSE, BLACK, SILTY, FINE SAND WITH SOME GRAVEL, WET	gm	
					BOTTOM OF BORING 45.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-105

PROJECT NAME PPG - NATRIUM

SHEET 2 of 2

DATE BEGAN 9-21-89 BORING NO. MW-106 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-21-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 637.48' N -4552.50' E -767.39' GWL DEPTH 20.85'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 1	5-6- 10-12	9.0	FIRM, BROWN, SILTY CLAY WITH INTERMIXED FINE COAL AND ASH, DRY		HNU BACKGROUND READING IS 0.4 ppm
	5.0	S 2	6-5- 5-4	18.0	SOFT, BROWN, SILTY CLAY, DRY	cl	
630.00							
	10.0	S 3	4-8- 12-13	21.0	FIRM, BROWN, SILTY CLAY WITH SMALL PIECES OF COAL, MOIST		
					13.0'		
	15.0	S 4	3-6- 5-8	17.0	MEDIUM DENSE, BROWN, SILTY, VERY FINE GRAINED SAND, WET	sm	
620.00							
10-16-89	20.0	S 5	3-3- 2-4	19.0	LOOSE, BROWN, SILTY, VERY FINE GRAINED SAND, WET		
					23.5'		
	25.0	S 6	7-21- 23-13	18.0	DENSE, BROWN, SILTY, POORLY SORTED, SAND AND GRAVEL, WET	sm	
610.00							
607.48	30.0						
					BOTTOM OF BORING 30.0'		

NOTES:

DRILLING CONTRACTOR BOWSER - MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-106

PROJECT NAME PPG -NATRIUM

SHEET 1 of 1

DATE BEGAN 9-21-89 BORING NO. MW-107 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-21-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 638.59' N -4585.29' E -601.81' GWL DEPTH 22.01'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

					CWE DATE	10-10-89	
ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	4-5- 6-8	8.0	FIRM, BROWN, SILTY CLAY, ROOTS, DRY	cl	HNU BACKGROUND READING IS 0.4 ppm
					3.5'		
	5.0	S 2	6-1- 5-6	24.0	LOOSE, BROWN, SILTY, VERY FINE GRAINED SAND, MOIST	sm	
630.00					8.5'		
	10.0	S 3	5-6- 7-9	9.0	MEDIUM DENSE, BROWN, FINE GRAINED SAND, MOIST	sw	
	15.0	S 4	8-9- 6-8	16.0	MEDIUM DENSE, BROWN, FINE GRAINED SAND, WET		
620.00					18.5'		
	20.0	S 5	1-6- 8-9	14.0	MEDIUM DENSE, BROWN, POORLY SORTED SAND AND GRAVEL, WET	gp	
10-16-89 ↓							
	25.0	S 6	6-3- 6-4	18.0	LOOSE, BROWN, POORLY SORTED, SAND AND GRAVEL, WET		
610.00							
600.59	30.0						
					BOTTOM OF BORING 30.0'		

NOTES:

DRILLING CONTRACTOR BOWSER - MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-107

PROJECT NAME PPG-NATRIUM

SHEET 1 of 1

DATE BEGAN 9-22-89 BORING NO. MW-108 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-22-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 641.50' N -4247.69' E -741.82' GWL DEPTH 25.72'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
640.00		S 1	4-4- 3-2	5.0	FILL, (LOOSE, BLACK, CINDERS, MOIST)	NA	HNU BACKGROUND READING IS 1.3 ppm
					3.0'		
	5.0	S 2	3-4- 6-8	15.0	FIRM, DARK BROWN, SILTY CLAY, MOIST	cl	
	10.0	S 3	3-5- 7-9	17.0	FIRM, BROWN, SILTY CLAY, MOIST		
630.00					13.5'		
	15.0	S 4	6-6- 9-10	23.0	MEDIUM DENSE, BROWN, SILTY SAND, MOIST	sm	
	20.0	S 5	7-7- 10-13	10.0	MEDIUM DENSE, BROWN, SILTY, FINE GRAINED SAND, WET		
620.00					23.0'		
	25.0	S 6	11-9- 7-17	9.0	MEDIUM DENSE, BROWN, SILTY, POORLY SORTED SAND AND GRAVEL, WET	sm	
					28.5'		
	30.0	S 7	4-4- 5-7	9.0	LOOSE, MEDIUM TO DARK BROWN, SILTY, POORLY SORTED SANDY GRAVEL, WET	gm	
610.00							
	35.0						
606.50							
					BOTTOM OF BORING 35.0'		

NOTES:

DRILLING CONTRACTOR BOWSER - MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-108

PROJECT NAME PPG-NATRIUM

SHEET 1 of 1

DATE BEGAN 9-25-89 BORING NO. MW-109 FIELD ENGINEER C. PETERMAN
DATE FINISHED 9-25-89 CHECKED BY J. BURDICK
GROUND SURFACE EL. 647.87' N -4221.07' E -575.81' GWL DEPTH 32.17'
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	> 50	0.0	FILL, (LARGE PIECES OF CONCRETE AND GRAVEL)		HNU BACKGROUND READING IS 0.3 ppm
	5.0					NA	
640.00		S 2	3-2- 4-8	13.0	FILL, (BROWN, CLAYEY GRAVEL AND COAL FINES, MOIST)		
					8.0'		
	10.0						
		S 3	2-9- 12-13	13.0	FIRM, BROWN, SILTY CLAY, MOIST	cl	
					12.5'		
	15.0						
630.00		S 4	6-7- 9-8	21.0	MEDIUM DENSE, BROWN, SILTY, VERY FINE GRAINED SAND, MOIST		sw/sm
	20.0						
		S 5	5-6- 7-5	17.0	MEDIUM DENSE, BROWN, VERY FINE GRAINED SAND WITH MEDIUM BROWN, SILTY, VERY FINE GRAINED SAND INTERBEDS, MOIST		
	25.0						
620.00		S 6	1-4- 8-8	19.0	MEDIUM DENSE, BROWN, VERY FINE GRAINED SAND, MOIST		gw
	30.0						
10-16-89		S 7	7-7- 3-6	9.0	MEDIUM DENSE, BROWN, VERY FINE GRAINED SAND, WET		
					31.0'		gm
					33.0'		
	35.0						gm
610.00		S 8	4-4- 6-5	7.0	LOOSE, BROWN, SILTY TO SANDY GRAVEL, WET		

NOTES:

DRILLING CONTRACTOR BOWSER - MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-109

PROJECT NAME PPG-NATRIUM

SHEET 1 of 2

FIELD ENGINEER C. PETERMAN

CHECKED BY J. BURDICK

GWL DEPTH 32.17'

GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 9	12-10- 14-15	18.0	MEDIUM DENSE, BROWN, SILTY-TO-SANDY GRAVEL, WET		
	45.0					gm	
600.87	47.0	S 10	11-12- 10-9	24.0	MEDIUM DENSE, BROWN, SILTY-TO-SANDY GRAVEL, WET		
					BOTTOM OF BORING 47.0'		

NOTES:

DRILLING CONTRACTOR BOWSER - MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT SPOON SAMPLES COLLECTED BY STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-109

PROJECT NAME PPG-NATRIUM

SHEET 2 of 2

DATE BEGAN 9-18-89BORING NO. MW-110FIELD ENGINEER D. MARCUMDATE FINISHED 9-18-89GROUND SURFACE EL. 636.35'N -2769.36'E -675.61'CHECKED BY J. BURDICKGWL DEPTH 13.63'DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERSGWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 1	7-10- 50/3	10.0	VERY DENSE, DARK BROWN, FINE-TO-MEDIUM SAND WITH SOME GRAVEL, DRY	sw	
	5.0				----- 3.5'		
630.0		S 2	9-15- 15-17	16.0	MEDIUM DENSE, BLACK, SILTY, FINE SAND; GRADES TO A BROWN CLAY WITH DEPTH, DRY	sm	
	10.0				----- 8.5'		
		S 3	3-3- 3-3	4.0	SOFT, BROWN, CLAY WITH SOME GRAVEL, DRY		
	15.0						
620.0		S 4	1-1- 1-2	24.0	VERY SOFT, BROWN, SILTY CLAY		GROUNDWATER NOTED AT 15.0' DURING DRILLING
	20.0					cl	
		S 5	1-1- 1-2	22.0	VERY SOFT, BROWN, SILTY CLAY, WET		
	25.0						
610.0		S 6	2-2- 3-5	22.0	SOFT, BROWNISH-GRAY, SILTY CLAY, WET		
		S 7	2-2- 2-3	22.0	VERY SOFT, BROWNISH-GRAY, SILTY CLAY, WET		
.35	30.0						
					BOTTOM OF BORING 30.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.DRILLING EQUIPMENT CME - 55DRILL CREW J. FALBO, L. BECHTOLSPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODSPROJECT NO. 303409BORING NO. MW-110PROJECT NAME PPG - NATRIUMSHEET 1 of 1

DATE BEGAN 9-27-89 BORING NO. MW-111 FIELD ENGINEER C. PETERMAN
DATE FINISHED 9-27-89
GROUND SURFACE EL. 630.54' N -2972.94' E -607.01' CHECKED BY J. BURDICK
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DEPTH 6.07'
GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
630.0		S 1	15-12- 40-28	21.0	FILL, (COAL, CINDERS, BROWN AND GRAY, SILTSTONE, DRY)		
10-16-89	5.0	S 2	2-1- 1-1	14.0	FILL, (COAL, CINDERS, BROWN AND GRAY SILTSTONE, WET)	NA	
620.0	10.0	S 3	7-13- 13-13	23.0	MEDIUM DENSE, DARK BROWN, MEDIUM SAND, WET		
	15.0	S 4	7-35- 50/3	18.0	VERY DENSE, DARK BROWN AND AQUA GREEN, MEDIUM-TO-COARSE SAND AND GRAVEL, PARTIALLY CONSOLIDATED, WET	SW	
610.0	20.0	S 5	50/3	3.0	VERY DENSE, BROWNISH-GRAY, SILTY SAND, WET	sm	
608.54	22.0						
					BOTTOM OF BORING 22.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-111

SHEET 1 of 1

DATE BEGAN 9-18-89 BORING NO. MW-112 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-18-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 632.99' N -2929.62' E -768.07' GWL DEPTH 7.87'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
630.0		S 1	3-5- 6-8	13.0	FILL, (FINE COAL AND CINDER PARTICLES WITH LOOSE, BROWN, SILTY CLAY, MOIST)		HNU BACKGROUND READING IS 1.4 ppm
	5.0	S 2	4-5- 7-7	2.0	FILL, (COAL AND CINDERS, MOIST)	NA	
10-16-89							
	10.0	S 3	5-2- 4-7	14.0	SOFT, BROWN, SILTY CLAY, MOIST	cl	
610.0	15.0	S 4	2-2- 3-5	22.0	LOOSE, BROWN, SILTY, FINE SAND, WET	sm	
	20.0	S 5	6-3- 5-4	21.0	LOOSE, BROWN, SILTY, FINE SAND, WET		
	25.0	S 6	3-2- 1-2	21.0	VERY SOFT, BROWN, CLAYEY SILT, WET	cl	
	30.0	S 7	3-4- 6-3	24.0	LOOSE, BROWN, SILTY, FINE SAND, WET	sm	
600.0							
597.99	35.0						
					BOTTOM OF BORING 35.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-112

SHEET 1 of 1

DATE BEGAN 9-14-89 BORING NO. MW-113 FIELD ENGINEER C. PETERMAN
DATE FINISHED 9-14-89 CHECKED BY J. BURDICK
GROUND SURFACE EL. 634.00' N 4162.68' E -486.49' GWL DEPTH 10.41'
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
630.0		S 1	4-5- 4-7	7.0	SOFT, BROWNISH-GRAY, SANDY SILT WITH ROOTS, MOIST	ol	
	5.0						
		S 2	4-5- 7-7	2.0	FIRM, DARK BROWN SILT WITH ROOTS, DRY		
	10.0						
		S 3	4-5- 6-8	18.0	FIRM, BROWN, SILTY CLAY, MOIST		
620.0						cl	
	15.0						
		S 4	3-2- 3-3	1.5	SOFT, BROWN, SILTY CLAY, MOIST		
	20.0						
		S 5	1-1- 1-1	13.0	VERY SOFT, BROWN, SILTY CLAY, WET		
610.0							
	25.0						
		S 6	2-2- 2-3	12.0	VERY LOOSE, BROWN, SILTY, FINE SAND, WET		
	30.0					sm	
		S 7	3-4- 6-3	24.0	LOOSE, BROWN, SILTY, FINE SAND, WET		
600.0							
599.00	35.0						
					BOTTOM OF BORING 35.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-113

SHEET 1 of 1

DATE BEGAN 9-15-89 BORING NO. MW-114 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-15-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 637.67' N 3072.29' E -487.28' GWL DEPTH 22.33'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	3-10- 13-15	22.0	FILL, (BLACK, FINE MATERIAL WITH COAL AND ASH, DRY)		
	5.0					NA	
630.0		S 2	2-4- 5-4	0.0	NO RECOVERY		
	10.0						
		S 3	5-7- 8-8	14.0	FIRM, BROWN CLAY MOTTLED WITH LIGHT GRAY CLAY, MOIST	cl	
	15.0						
620.0		S 4	4-5- 7-9	20.0	MEDIUM DENSE, BROWN, SILTY, FINE SAND, MOIST		
	20.0					sm	
10-16-89		S 5	3-4- 4-5	24.0	LOOSE, BROWN, SILTY, FINE SAND WITH COAL FRAGMENTS, WET		
	25.0						
		S 6	5-9- 7-10	17.0	MEDIUM DENSE, BROWN, SILTY, FINE SAND (8.0")		
610.0					MEDIUM DENSE, BROWN, COARSE SAND WITH SILT AND PEBBLES, WET		
	30.0						
		S 7	8-4- 5-8	9.0	LOOSE, BROWN, SILTY, SANDY GRAVEL, WET	gm	
	35.0						
		S 8	5-4- 5-6	24.0	LOOSE, BROWN, SILTY-TO-SANDY, GRAVEL, WET		
600.0							
597.67	40.0						

NOTES: BOTTOM OF BORING

DRILLING CONTRACTOR BOWSER-MORNER, INC. 40.0'

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

PROJECT NO. 303409

BORING NO. MW-114

PROJECT NAME PPG - NATRIUM

SHEET 1 of 1

DATE BEGAN 9-12-89 BORING NO. MW-115 FIELD ENGINEER C. PETERMAN
DATE FINISHED 9-13-89
GROUND SURFACE EL. 638.54' N 3938.79' E -298.75' CHECKED BY J. BURDICK
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DEPTH 22.55'
GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	4-7- 13-14	17.0	FIRM, DARK GRAY-TO-BLACK SILT WITH YELLOW CLAY, DRY	ml	
	5.0	S 2	3-2- 3-6	19.0	SOFT, BLACK, CLAYEY SILT, DRY		
630.0					SOFT, BROWN, SILTY CLAY, MOTTLE LIGHT GRAY, MOIST		
	10.0	S 3	5-8- 11-10	20.0	FIRM, BROWN, SILTY CLAY, MOIST	cl	
	15.0	S 4	4-6- 5-7	22.0	FIRM, BROWN, SILTY CLAY WITH LIGHT GRAY CLAY LENSES, WET		
620.0							
	20.0	S 5	2-5- 2-6	19.0	LOOSE, BROWN, SILTY, FINE GRAINED SAND, WET	sm	
10-16-89							
	25.0	S 6	10-12- 13-12	12.0	MEDIUM DENSE, BROWN, SILTY, FINE-TO-COARSE SAND, WET		
610.0							
	30.0	S 7	3-9- 10-12	14.0	MEDIUM DENSE, BROWN, SILTY, COARSE SAND AND GRAVEL, WET	gm	
	35.0	S 8	4-5- 9-8	19.0	LOOSE, BROWN, SILTY, SANDY GRAVEL, WET		
600.0					MEDIUM DENSE, BROWN, SILTY, FINE TO MEDIUM SAND, TRACE GRAVEL, WET	sw	
	40.0	S 9	5-3- 5-11	22.0	LOOSE, BROWN, SILTY, FINE SAND, WET		
596.54	42.0				LOOSE, CLEAN, COARSE SAND AND GRAVEL	gw	

NOTES: BOTTOM OF BORING
DRILLING CONTRACTOR BOWSER-MORNER, INC. 42.0'

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-115

PROJECT NAME PPG - NATRIUM

SHEET 1 of 1

DATE BEGAN 9-18-89 BORING NO. MW-116 FIELD ENGINEER C. PETERMAN
 DATE FINISHED 9-18-89
 GROUND SURFACE EL. 638.73' N 2536.96' E -537.09' CHECKED BY J. BURDICK
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DEPTH 23.14'
 GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
		S 1	10-12- 17-12	20.0	FILL, (BLACK, FINE-TO-MEDIUM COAL AND ASH, DRY)		
	5.0	S 2	3-4- 7-6	9.0	FILL, (BLACK, FINE-TO-MEDIUM COAL AND ASH, DRY)	NA	
630.0	10.0				FILL, (BLACK, FINE-TO-MEDIUM COAL AND ASH, DRY)		
		S 3	4-6- 7-12	23.0	11.0'		
					FIRM, BROWN, SILTY CLAY, DRY	cl	
	15.0				13.5'		
		S 4	5-5- 7-8	16.0	MEDIUM DENSE, BROWN, SILTY, VERY FINE SAND, MOIST		
620.0	20.0					sm	
		S 5	8-9- 11-12	18.0	MEDIUM DENSE, BROWN, SILTY, FINE SAND, MOIST		
10-16-89					23.5'		
	25.0						
		S 6	5-7- 7-8	10.0	MEDIUM DENSE, BROWN, SILTY, COARSE SAND AND GRAVEL, WET		
0.0							
	30.0						
		S 7	6-4- 8-7	6.0	MEDIUM DENSE, BROWN, COARSE SAND AND GRAVEL, WET	gm	
	35.0						
		S 8	19-9- 6-7	7.0	MEDIUM DENSE, BROWN, COARSE SAND AND GRAVEL, WET		
600.0							
598.73	40.0						

NOTES: BOTTOM OF BORING

DRILLING CONTRACTOR BOWSER-MORNER, INC. 40.0'

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

DRILLING EQUIPMENT SIMCO 4000

DRILL CREW W. LIPE, T. CAREY

PROJECT NO. 303409

BORING NO. MW-116

PROJECT NAME PPG - NATRIUM

SHEET 1 of 1

DATE BEGAN 9-12-89

BORING NO. MW-117

FIELD ENGINEER D. MARCUM

DATE FINISHED 9-13-89

GROUND SURFACE EL. 652.53'

N 3337.53'

E -42.19'

CHECKED BY J. BURDICK

DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS

GWL DEPTH 37.26'

GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
650.0		S 1	10-11- 12-10	24.0	TOPSOIL (4.0") UNDERLAIN BY FIRM, BROWN SILT, DRY	ol	STOP DRILLING AND SAMPLING ACTIVITIES ON 9-12-89 AT 17.0'
	5.0				3.5'		
		S 2	4-4- 7-8	24.0	FIRM, BROWN, SANDY SILT, DRY	ml	
	10.0				8.5'		
640.0		S 3	4-9- 7-8	12.0	MEDIUM DENSE, BROWN, CLAYEY SAND WITH GRAVEL AND COBBLES, DRY	gc	
	15.0				13.5'		
		S 4	4-6- 8-10	16.0	MEDIUM DENSE, BROWN-TO-BLACK, MEDIUM-TO-COARSE SAND, DRY		
	20.0						
630.0		S 5	12-12- 7-8	12.0	MEDIUM DENSE, BROWN, MEDIUM-TO-COARSE SAND WITH SOME GRAVEL, DRY	sp	
	25.0						
		S 6	8-8- 8-12	12.0	MEDIUM DENSE, BROWNISH-BLACK, MEDIUM-TO-COARSE SAND WITH SOME GRAVEL, DRY		
	30.0				28.5'		
620.0		S 7	17-7- 7-8	12.0	MEDIUM DENSE, BROWN, GRAVEL WITH SOME COARSE SAND, DRY		
	35.0					gp	
10-16-89		S 8	47-38- 28-50	4.0	VERY DENSE, GRAVEL AND COBBLES, MOIST		
	40.0					gp	

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-117

SHEET 1 of 2

DATE BEGAN 9-12-89BORING NO. MW-117FIELD ENGINEER D. MARCUMDATE FINISHED 9-13-89CHECKED BY J. BURDICKGROUND SURFACE EL. 652.53'N 3337.53' E -42.19'GWL DEPTH 37.26'DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERSGWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
610.0		S 9	9-10- 13-15	12.0	MEDIUM DENSE, GRAVEL AND COBBLES WITH SOME BROWN, COARSE SAND, WET		GROUNDWATER NOTED AT 40.0' DURING DRILLING
	45.0	S 10	6-2- 2-13	8.0	LOOSE, BROWN, COARSE SAND AND GRAVEL, WET	gp	
	50.0	S 11	4-5- 7-10	18.0	MEDIUM DENSE, BROWN, COARSE SAND AND GRAVEL, WET		
597.53	55.0	S 12	9-13- 28-31	18.0	DENSE, BROWN, COARSE SAND WITH SOME GRAVEL, WET	sw	
					BOTTOM OF BORING 55.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODSDRILLING EQUIPMENT CME - 55DRILL CREW J. FALBO, L. BECHTOLPROJECT NO. 303409BORING NO. MW-117PROJECT NAME PPG - NATRIUMSHEET 2 of 2

DATE BEGAN 9-26-89 BORING NO. MW-118 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-26-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 657.34' N 280.83' E -43.58' GWL DEPTH 41.09'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
		S 1	3-1- 1-3	12.0	SOFT, BROWN, SILTY CLAY WITH SOME GRAVEL, MOIST	cl	
	5.0				3.5'		
650.0		S 2	5-6- 6-7	14.0	MEDIUM DENSE, BROWN, SILTY, FINE-TO-MEDIUM SAND, MOIST	sm	
	10.0				8.5'		
		S 3	3-6- 6-7	18.0	MEDIUM DENSE, BROWN, MEDIUM SAND, MOIST		
	15.0						
640.0		S 4	5-6- 8-14	18.0	MEDIUM DENSE, BROWN, MEDIUM SAND, MOIST	sp	
	20.0						
		S 5	3-5- 8-8	14.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND WITH SOME GRAVEL, MOIST		
	25.0				23.5'		
630.0		S 6	5-10- 10-20	12.0	MEDIUM DENSE, BROWN, SILTY, FINE-TO-MEDIUM SAND WITH SOME GRAVEL, MOIST	sm	
	30.0				28.5'		
		S 7	8-19- 24-28	18.0	DENSE, BROWN, FINE-TO-MEDIUM SAND, MOIST	sp	
	35.0				33.5'		
620.0		S 8	19-33- 30-39	18.0	VERY DENSE, BROWN, MEDIUM SAND AND GRAVEL, MOIST	sw	
	40.0				38.5'		
						sp	

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-118

PROJECT NAME PPG - NATRIUM

SHEET 1 of 2

DATE BEGAN 9-26-89 BORING NO. MW-118 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-26-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 657.34' N 280.83' E -43.58' GWL DEPTH 41.09'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
10-16-89		S 9	27-47- 47-39	18.0	VERY DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, MOIST		
	45.0						
610.0		S 10	13-20- 23-27	18.0	DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, WET		
	50.0					sp	GROUNDWATER NOTED AT 44.0' DURING DRILLING
		S 11	15-20- 24-29	16.0	DENSE, BROWN, FINE-TO-COARSE SAND AND GRAVEL, WET		
	55.0						
600.0		S 12	12-12- 18-20	17.0	DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, WET		
598.34	59.0	S 13	9-10- 12-18	18.0	MEDIUM DENSE, BROWN, FINE-TO-COARSE SAND AND GRAVEL, WET		
					BOTTOM OF BORING 59.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-118

SHEET 2 of 2

DATE BEGAN 9-20-89 BORING NO. MW-119 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-20-89 CHECKED BY J. BURDICK
 GROUND SURFACE EL. 671.33' N 298.99' E 121.75' GWL DEPTH 55.12'
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
670.0		S 1	13-17- 22-16	18.0	DENSE, BROWN, FINE-TO-MEDIUM SAND WITH GRAVEL, DRY	sp	
	5.0	S 2	3-3- 3-4	16.0	LOOSE, BROWN, MEDIUM-TO-COARSE SAND WITH GRAVEL, MOIST		
660.0	10.0	S 3	3-3- 3-4	12.0	LOOSE, BROWN, MEDIUM-TO-COARSE SAND WITH GRAVEL, MOIST	sw	
	15.0	S 4	4-5- 6-8	12.0	MEDIUM DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, MOIST		
650.0	20.0	S 5	9-10- 10-14	14.0	MEDIUM DENSE, BROWN, FINE SAND, MOIST		
	25.0	S 6	15-20- 22-31	20.0	DENSE, BROWN, FINE-TO-MEDIUM SAND, MOIST	sm	
640.0	30.0	S 7	14-14- 28-39	14.0	DENSE, BROWN, FINE-TO-MEDIUM SAND, MOIST		
	35.0	S 8	21-33- 40-41	16.0	VERY DENSE, BROWN, FINE-TO-MEDIUM SAND WITH GRAVEL, MOIST	gm	
	40.0						

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-119

SHEET 1 of 2

DATE BEGAN 9-20-89 BORING NO. MW-119 FIELD ENGINEER D. MARCUM
DATE FINISHED 9-20-89 CHECKED BY J. BURDICK
GROUND SURFACE EL. 671.33' N 298.99' E 121.75' GWL DEPTH 55.12'
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
630.0		S 9	36-38- 37-41	2.0	VERY DENSE, BROWN, FINE-TO-MEDIUM SAND WITH GRAVEL AND COBBLES, MOIST		
	45.0	S 10	14-19- 21-28	17.0	DENSE, BROWN, FINE-TO-MEDIUM SAND WITH GRAVEL, MOIST	gm	
620.0	50.0	S 11	20-38- 41-41	19.0	VERY DENSE, BROWN, SILTY, FINE SAND WITH GRAVEL AND COBBLES, WET		GROUNDWATER NOTED AT 50.0' DURING DRILLING
	53.5'						
	55.0	S 12	8-10- 19-21	18.0	MEDIUM DENSE, BROWN, SILTY, VERY FINE SAND, WET	sm	
	58.5'						
610.0	60.0	S 13	4-5- 6-10	17.0	MEDIUM DENSE, BROWN, MEDIUM-TO-COARSE SAND AND GRAVEL, WET	gw	
	62.5'						
606.33	65.0	S 14	10-13- 18-20	20.0	DENSE, BROWN, FINE-TO-MEDIUM SAND WITH GRAVEL, WET	gm	
					BOTTOM OF BORING 65.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

BORING NO. MW-119

PROJECT NAME PPG - NATRIUM

SHEET 2 of 2

DATE BEGAN 9-21-89 BORING NO. MW-120 FIELD ENGINEER D. MARCUM
 DATE FINISHED 9-21-89
 GROUND SURFACE EL. 671.63' N 212.02' E 65.21' CHECKED BY J. BURDICK
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DEPTH 55.33'
 GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	U. S. C. S.	REMARKS
670.0		S 1	18-18- 20-30	18.0	DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, DRY	gm	
					3.5'		
	5.0	S 2	10-20- 7-50/4	18.0	MEDIUM DENSE, BLACK, COARSE SAND, WET	sw	
					8.5'		
	10.0	S 3	3-3- 6-6	6.0	LOOSE DENSE, BROWN, SILTY, MEDIUM SAND WITH GRAVEL, MOIST	gm	
660.0					13.5'		
	15.0	S 4	5-6- 7-8	8.0	MEDIUM DENSE, BROWN, MEDIUM-TO-COARSE SAND AND GRAVEL, MOIST	gp	
					18.5'		
	20.0	S 5	8-9- 14-18	16.0	MEDIUM DENSE, BROWN, MEDIUM-TO-COARSE SAND, WET	sw	
650.0					23.5'		
	25.0	S 6	10-11 14-14	0.0	NO RECOVERY	NA	
					28.5'		
	30.0	S 7	11-12- 13-14	18.0	MEDIUM DENSE, BROWN, MEDIUM SAND WITH GRAVEL, MOIST	sw	
640.0					33.5'		
	35.0	S 8	12-14- 20-22	22.0	DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, MOIST	gm	
	40.0						

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

PROJECT NAME PPG - NATRIUM

BORING NO. MW-120

SHEET 1 of 2

DATE BEGAN 9-21-89 BORING NO. MW-120 FIELD ENGINEER D. MARCUM
DATE FINISHED 9-21-89 CHECKED BY J. BURDICK
GROUND SURFACE EL. 671.63' N 212.02' E 65.21' GWL DEPTH 55.33'
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGERS GWL DATE 10-16-89

ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (6.0 IN)	REC (IN)	DESCRIPTION	u. s. c. s.	REMARKS
630.0		S 9	10-10- 13-14	20.0	MEDIUM DENSE, BROWN, FINE SAND WITH SOME GRAVEL, MOIST	gm	
					43.5'		
	45.0	S 10	10-10- 12-16	18.0	MEDIUM DENSE, BROWN, FINE SAND, MOIST	sm	
					48.5'		
620.0		S 11	19-20- 31-50/4	18.0	VERY DENSE, BROWN, FINE-TO-MEDIUM SAND AND GRAVEL, MOIST		
	55.0	S 12	19-20- 21-22	20.0	DENSE, BROWN, FINE-TO-MEDIUM SAND WITH SOME GRAVEL AND COBBLES, WET	gm	GROUNDWATER NOTED AT 56.0' DURING DRILLING
	60.0	S 13	15-18- 25-31	16.0	DENSE, BROWN, FINE-TO-MEDIUM SAND WITH GRAVEL AND COBBLES, WET		
610.0					63.5'		
	65.0	S 14	20-22- 25-32	21.0	DENSE, BROWN, FINE-TO-MEDIUM SAND, WET	sm	
					68.0'		
600.63	70.0	S 15	4-4- 7-7	17.0	MEDIUM DENSE, BROWN, FINE-TO-COARSE SAND, WET	sp	
	71.0						
					BOTTOM OF BORING 71.0'		

NOTES:

DRILLING CONTRACTOR BOWSER-MORNER, INC.

DRILLING EQUIPMENT CME - 55

DRILL CREW J. FALBO, L. BECHTOL

SPLIT-SPOON SAMPLES COLLECTED BY
STANDARD ASTM METHODS

PROJECT NO. 303409

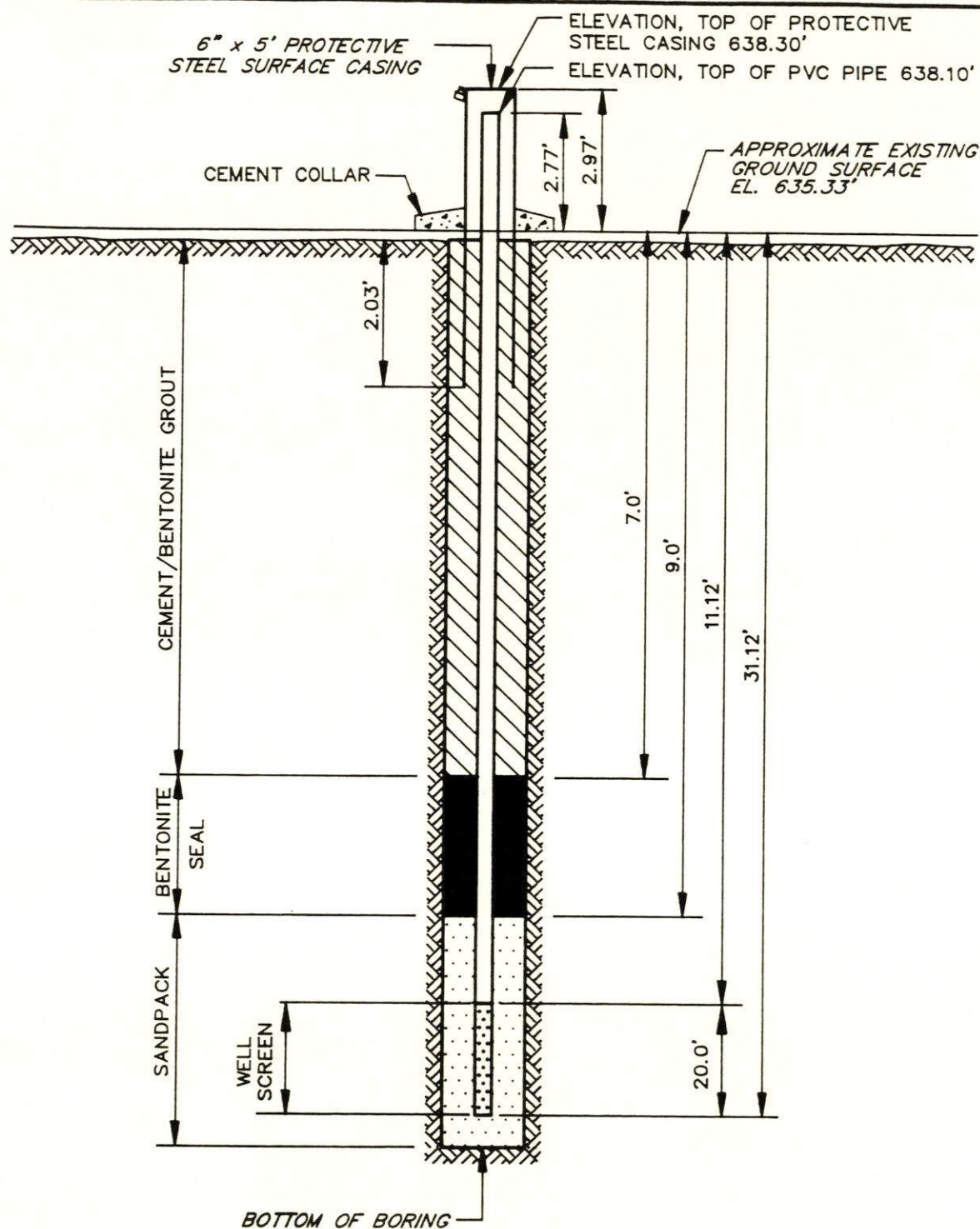
PROJECT NAME PPG - NATRIUM

BORING NO. MW-120

SHEET 2 of 2

APPENDIX B
MONITORING WELL CONSTRUCTION DIAGRAMS

DRAWN BY	KME	CHECKED BY	BMC	11-21-89	DRAWING NUMBER
	11-14-89	APPROVED BY	CLP	11-21-89	
	303409-A14				



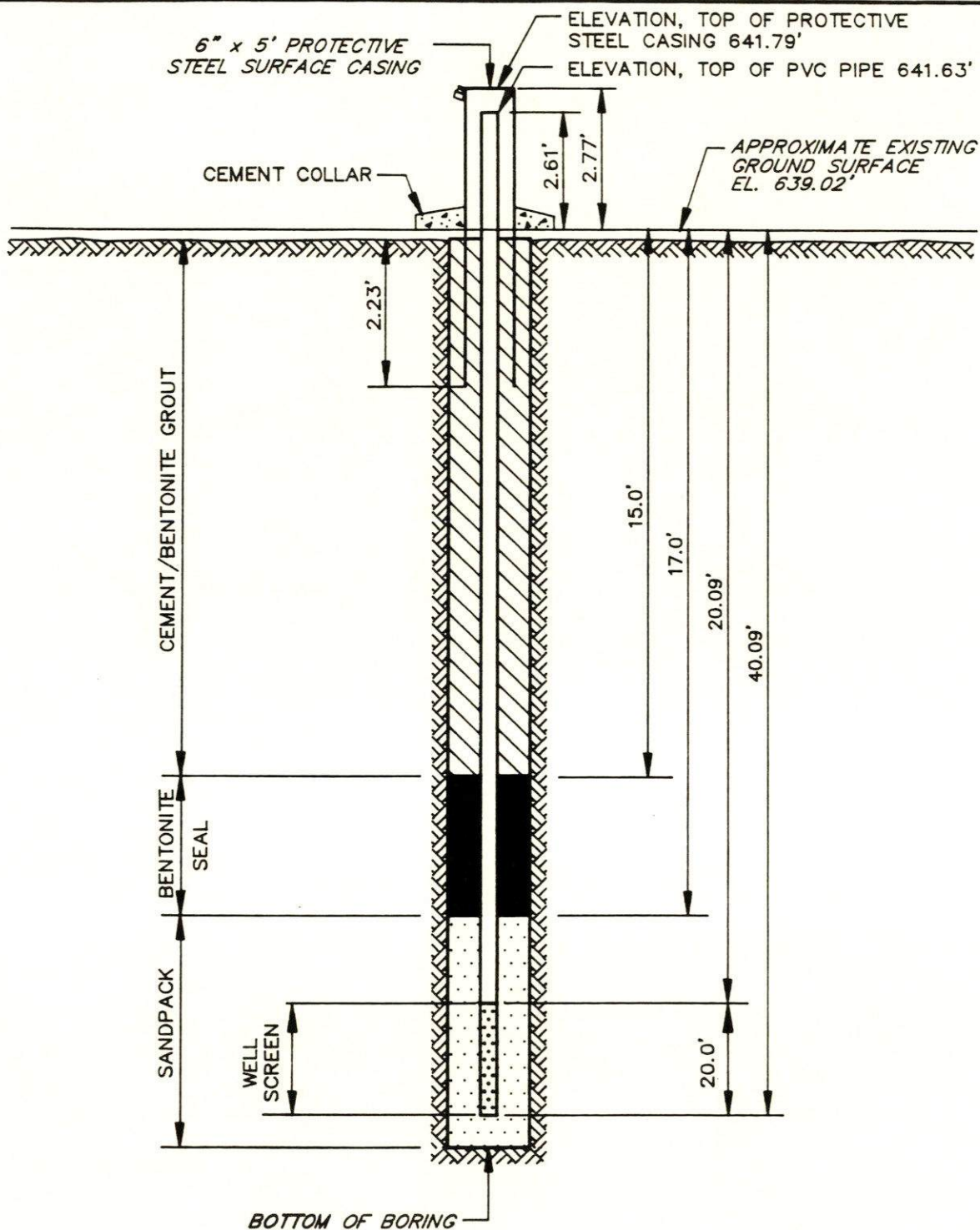
NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 624.21'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-100
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.98'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-101
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

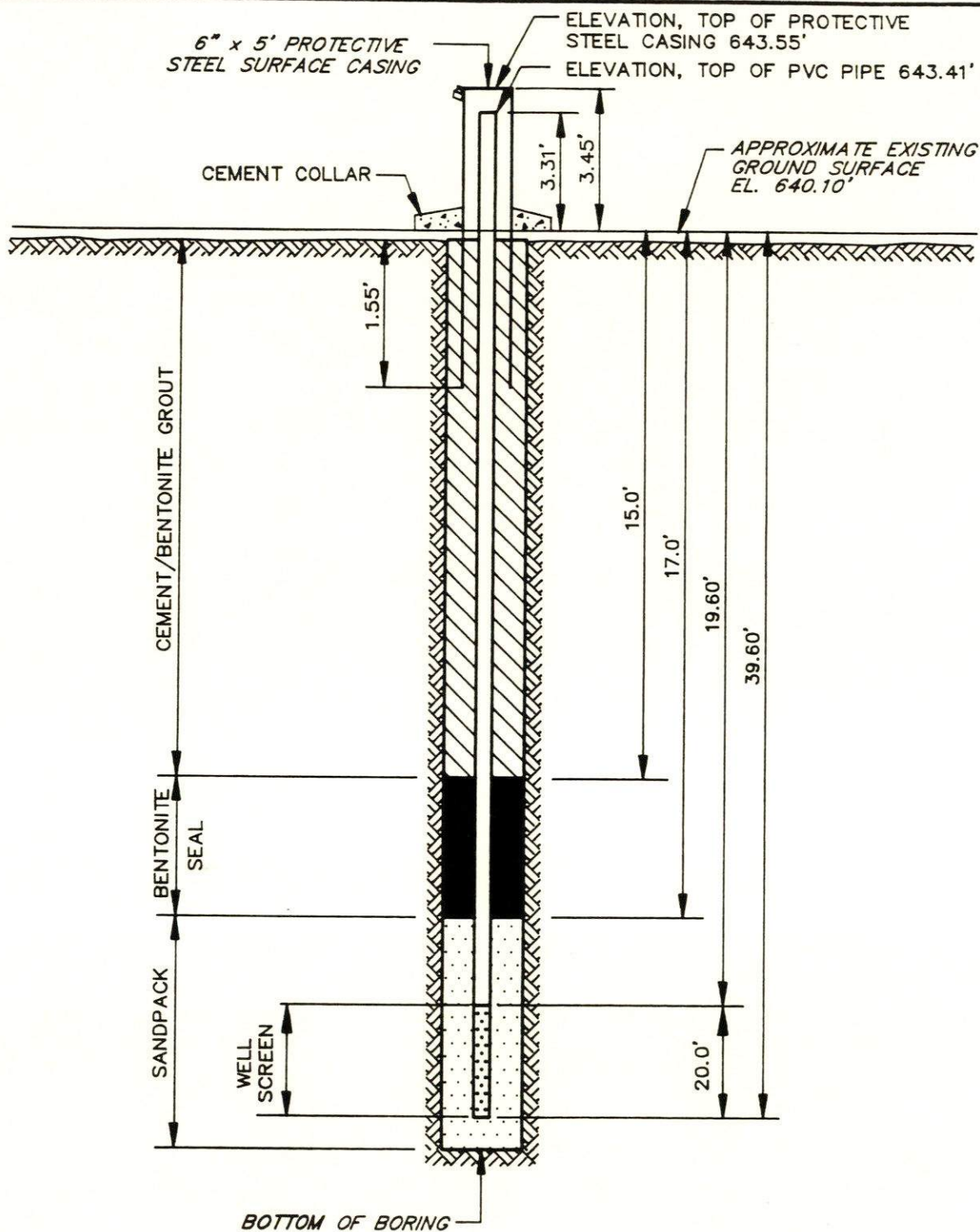
DRAWING NUMBER 303409-A16

11-21-89
11-24-89

CHECKED BY BMC
APPROVED BY CLP

KME
11-14-89

DRAWN BY



NOTES:

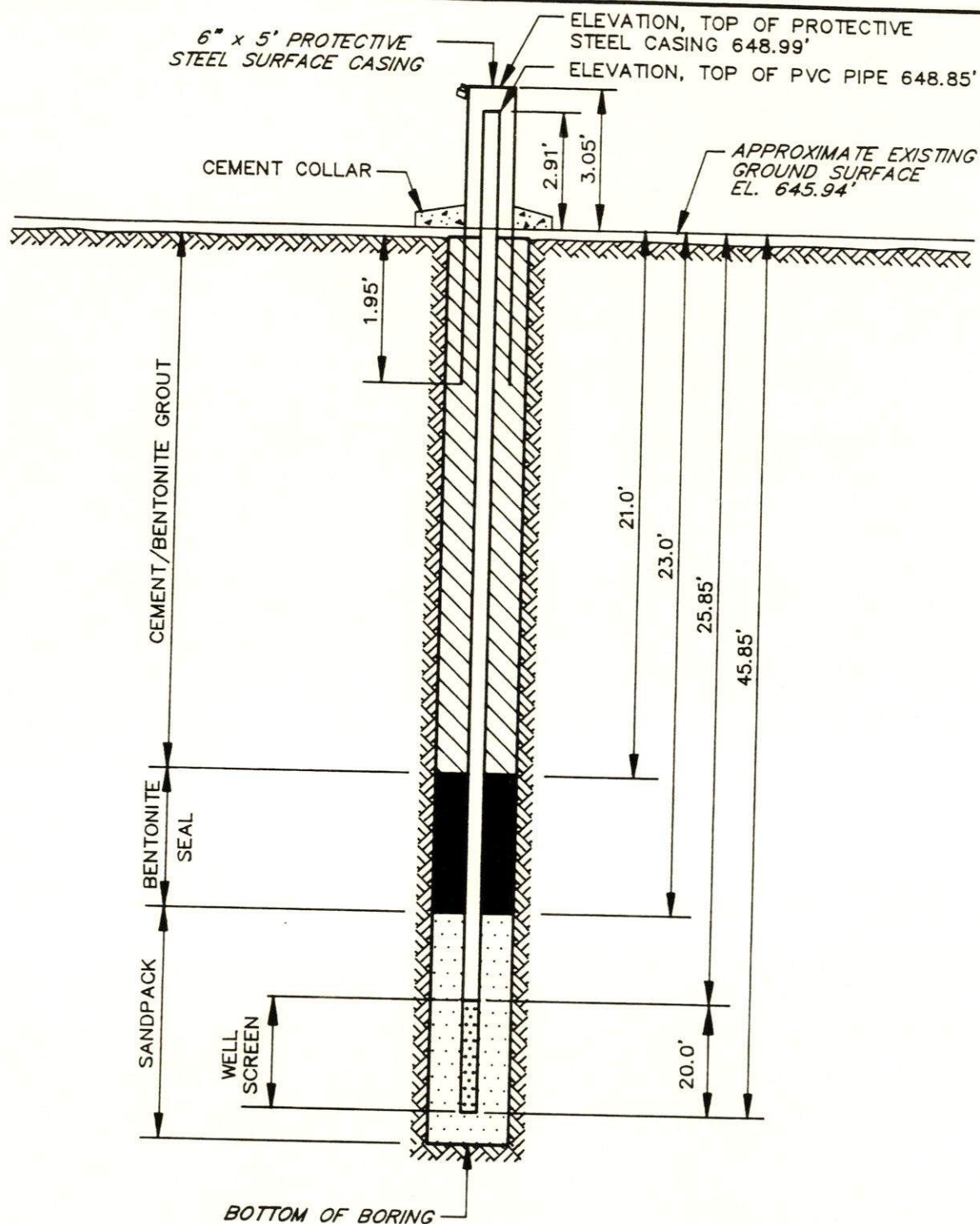
1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.68'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-102
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



DRAWN BY	KME	11-14-89	CHECKED BY	BMC	11-21-89	DRAWING NUMBER	303409-A17
			APPROVED BY	CLP	11-21-89		



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 618.18'
5. WATER LEVEL READING ON 10-16-89

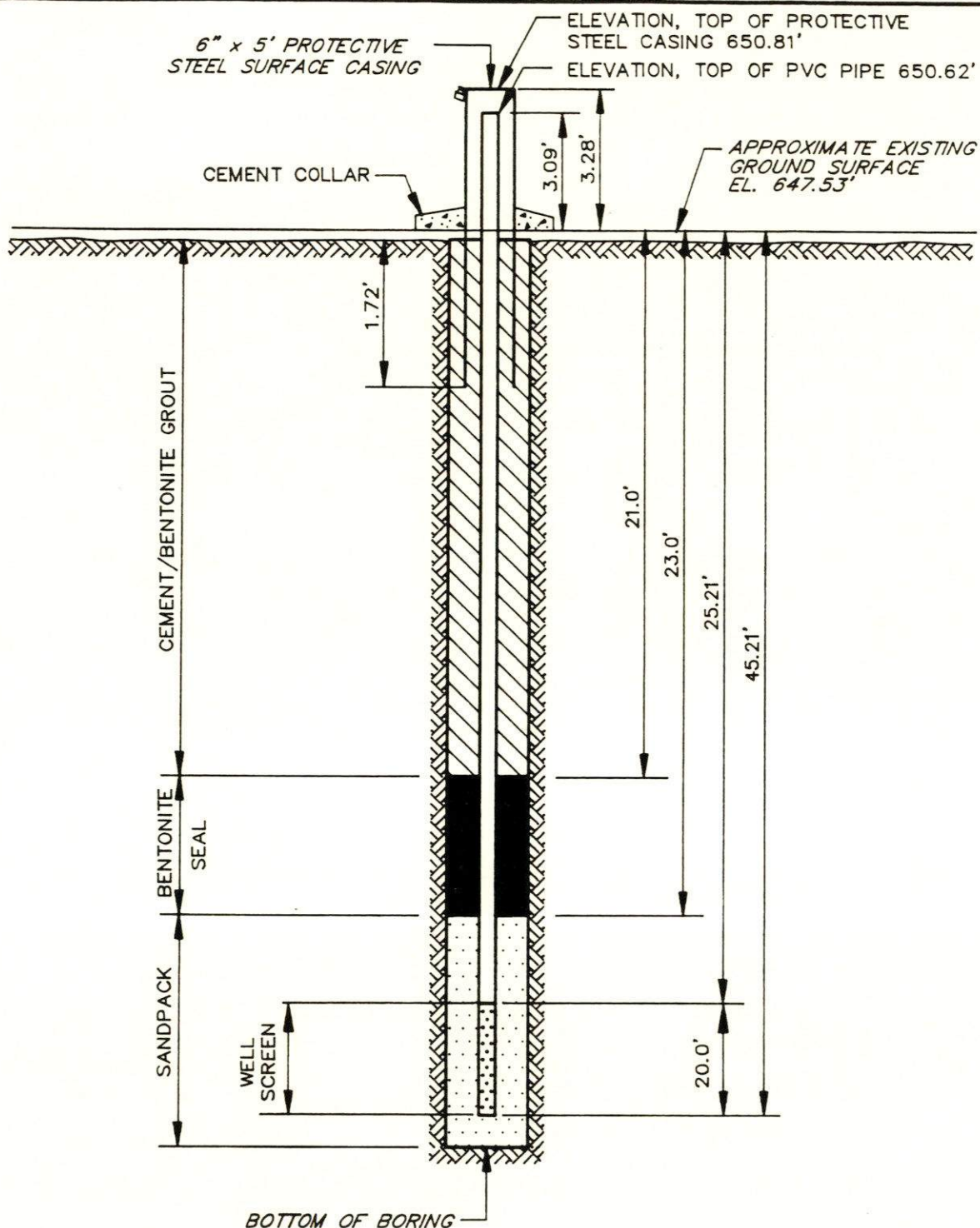
INSTALLATION DETAILS
MONITORING WELL MW-103
NATRIUM SITE

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWN BY	KME	CHECKED BY	BMC	DRAWING NUMBER
BY	11-14-89	APPROVED BY	CLP	303409-A18
				11-21-89
				11-24-89



NOTES:

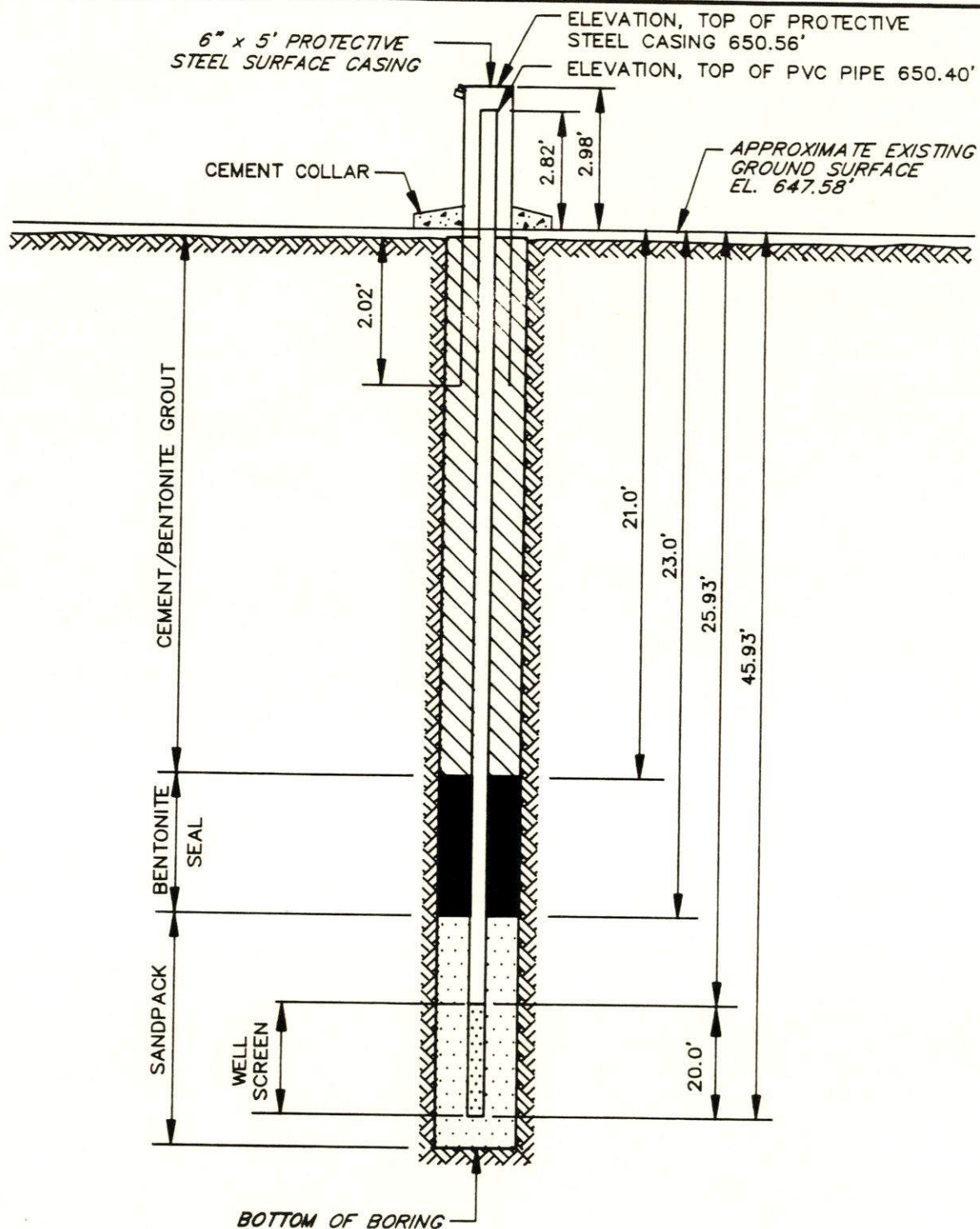
1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 617.31'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-104
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWN BY	KME	CHECKED BY	BMC	11-21-89	DRAWING NUMBER	303409-A19
	11-14-89	APPROVED BY	CLP	11-21-89		



NOTES:

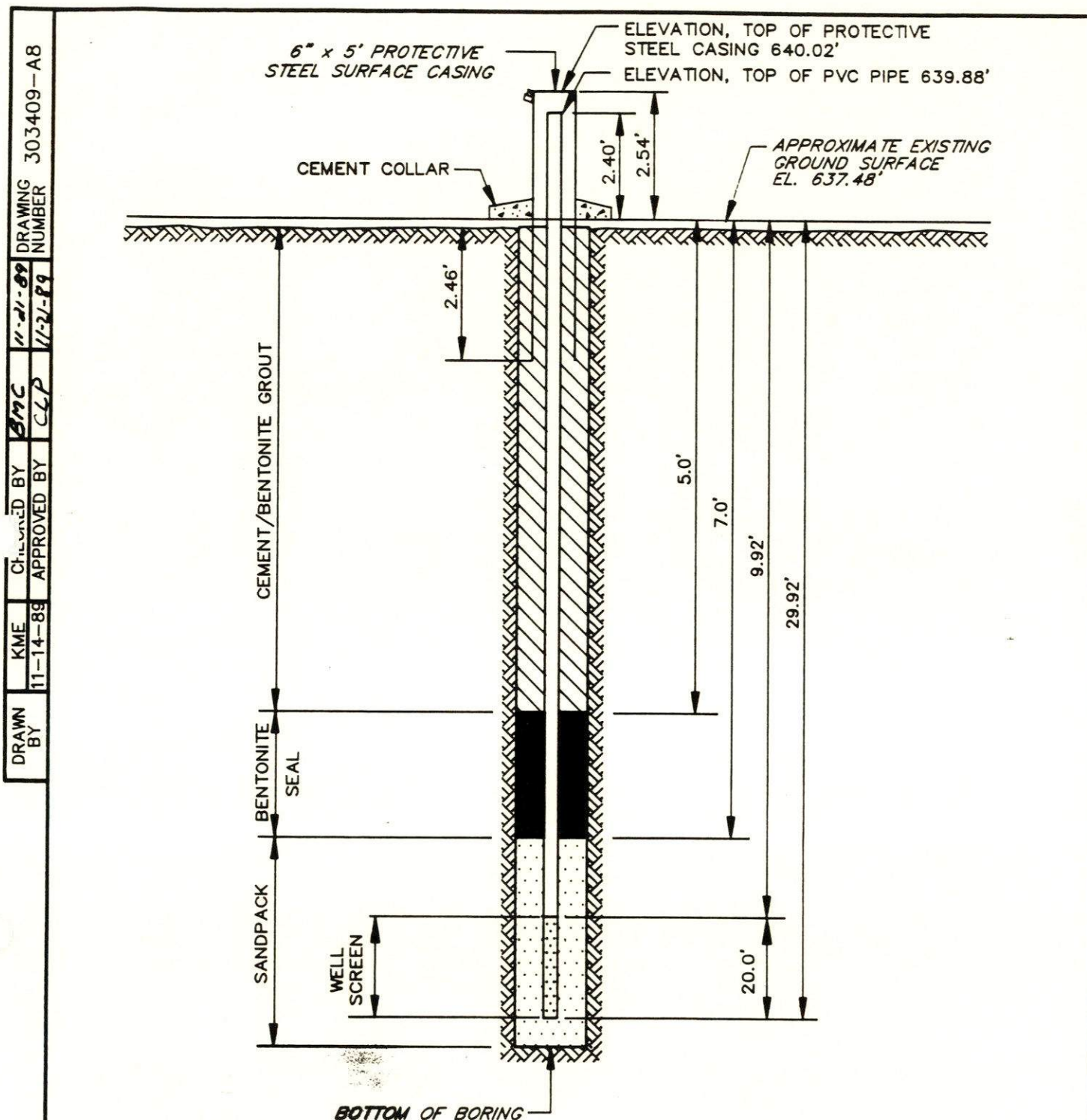
1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 618.18'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-105
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



INTERNATIONAL
TECHNOLOGY
CORPORATION



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 616.63'
5. WATER LEVEL READING ON 10-16-89

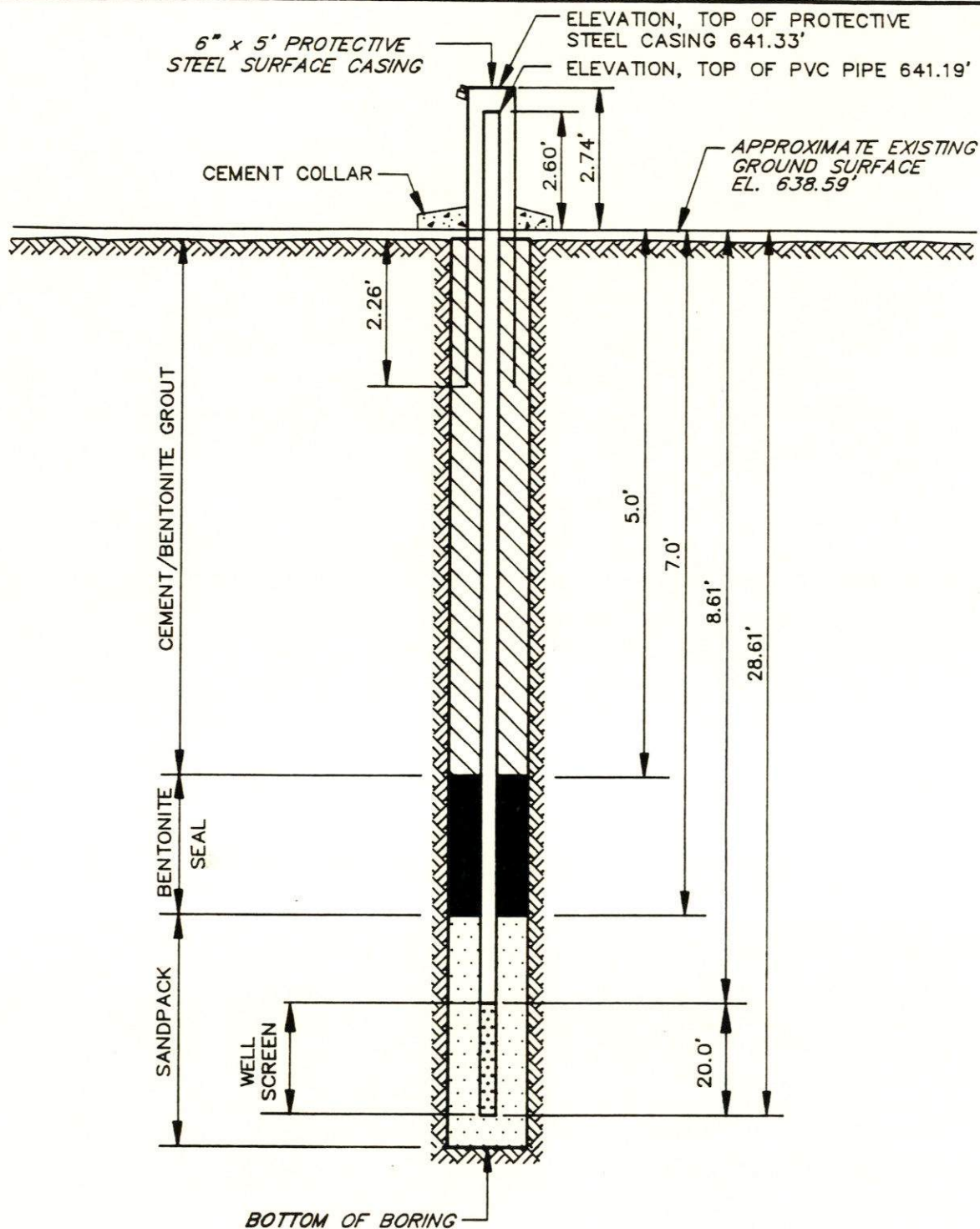
INSTALLATION DETAILS
 MONITORING WELL MW-106
 NATRIUM SITE
 PREPARED FOR

PPG INDUSTRIES, INC.
 PITTSBURGH, PENNSYLVANIA



DRAWN BY KME 11-14-88
 CHECKED BY BNC 11-21-89
 APPROVED BY CLP 11-21-89
 DRAWING NUMBER 303409-A8

DRAWN BY KME 11-14-89 CHECKED BY BMC 11-21-89 APPROVED BY CLP 11-21-89 DRAWING NUMBER 303409-A9



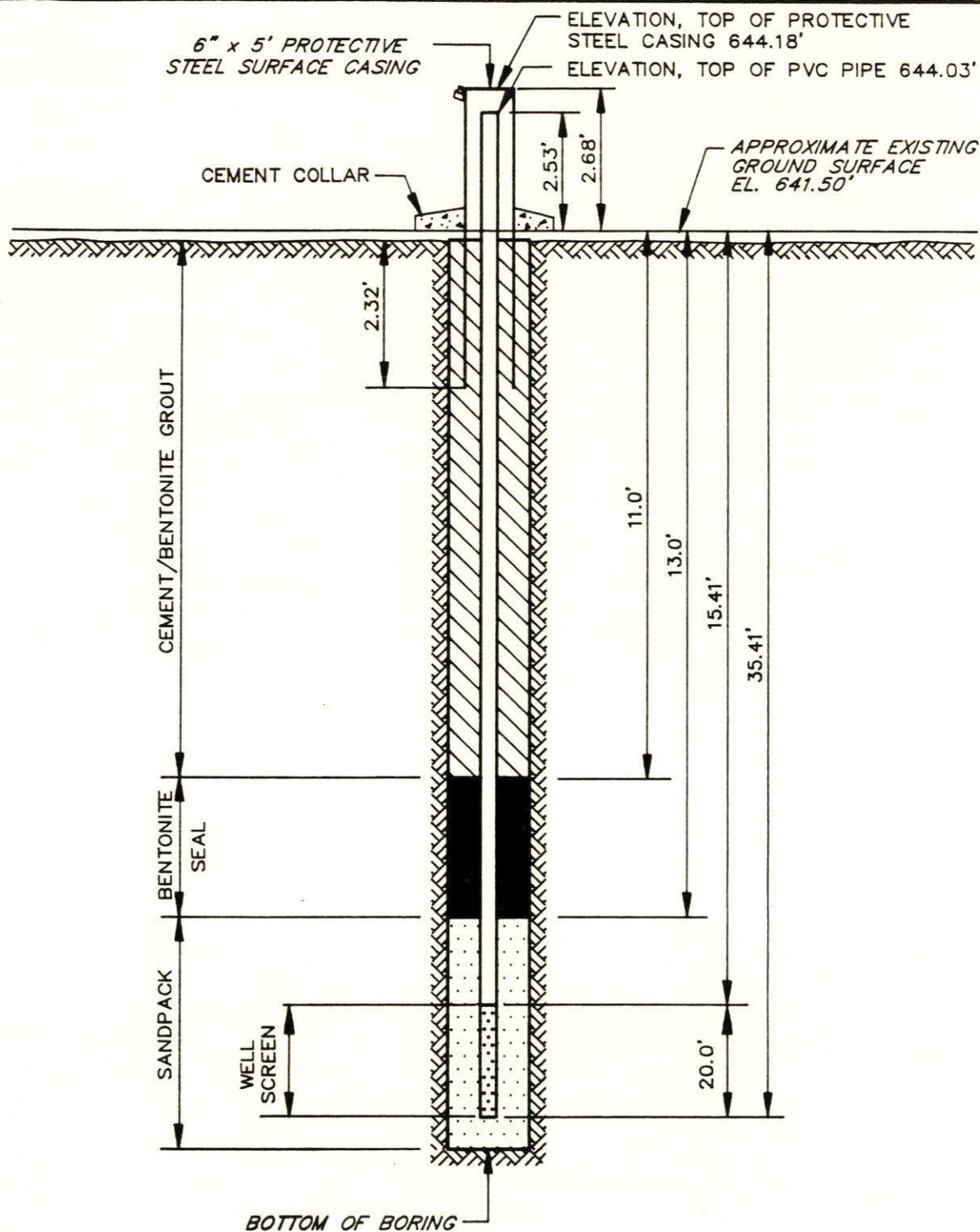
NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 616.58'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-107
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA





NOTES:

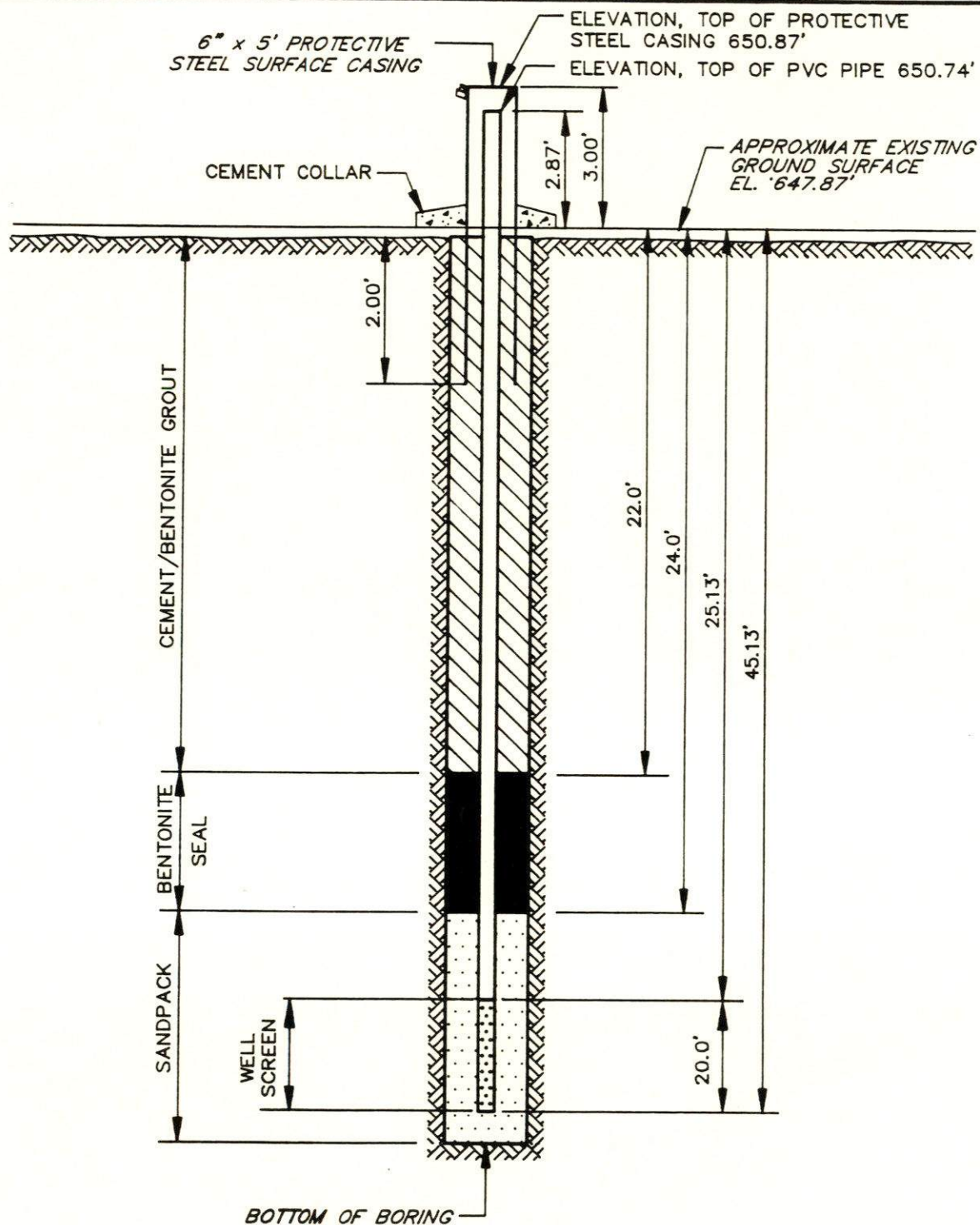
1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.78'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-108
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



DRAWN BY
KME
11-14-89
CHECKED BY
BMC
11-21-89
APPROVED BY
CLP
11-21-89
DRAWING NUMBER
303409-A11



NOTES:

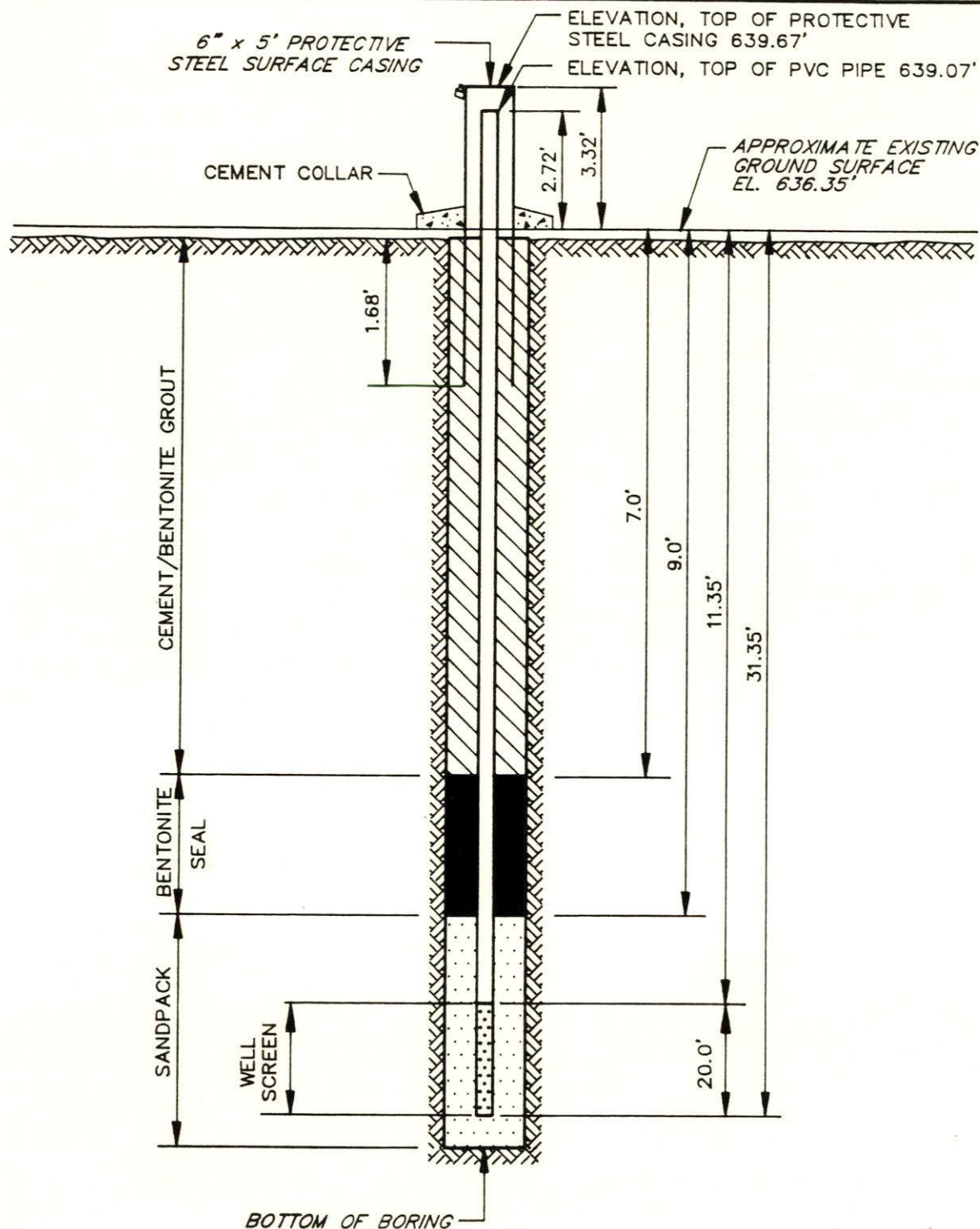
1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.70'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-109
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWN BY	KME	CHECKED BY	BMC	DRAWING NUMBER	303409-A20
	11-14-89	APPROVED BY	CLP	11-21-89	11-21-89



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 622.72'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-110
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWING NUMBER 303409-A21

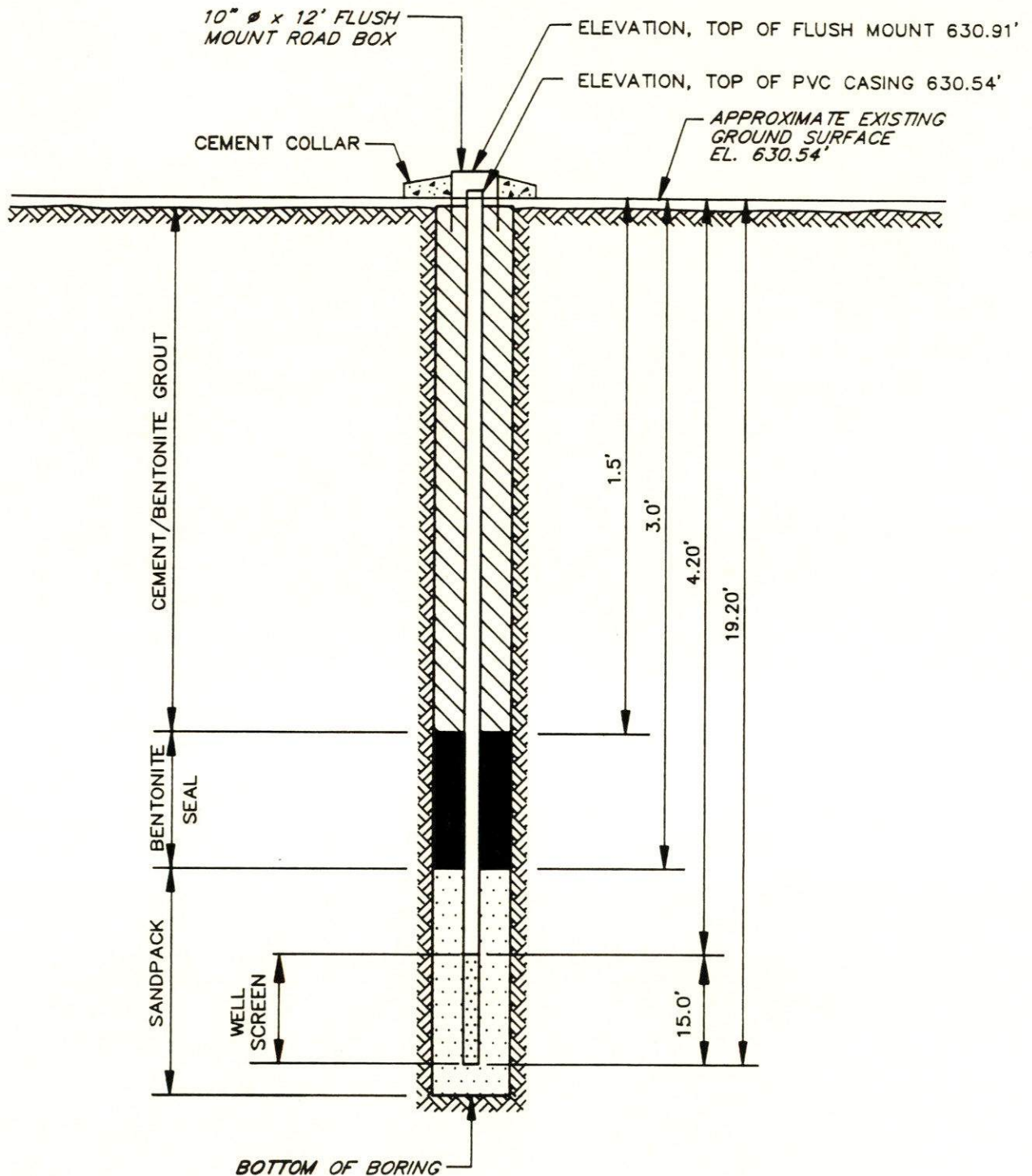
11-21-89
1/21-89

DMC
CLP

CHECKED BY
APPROVED BY

KME
11-14-89

DRAWN BY



NOTES:

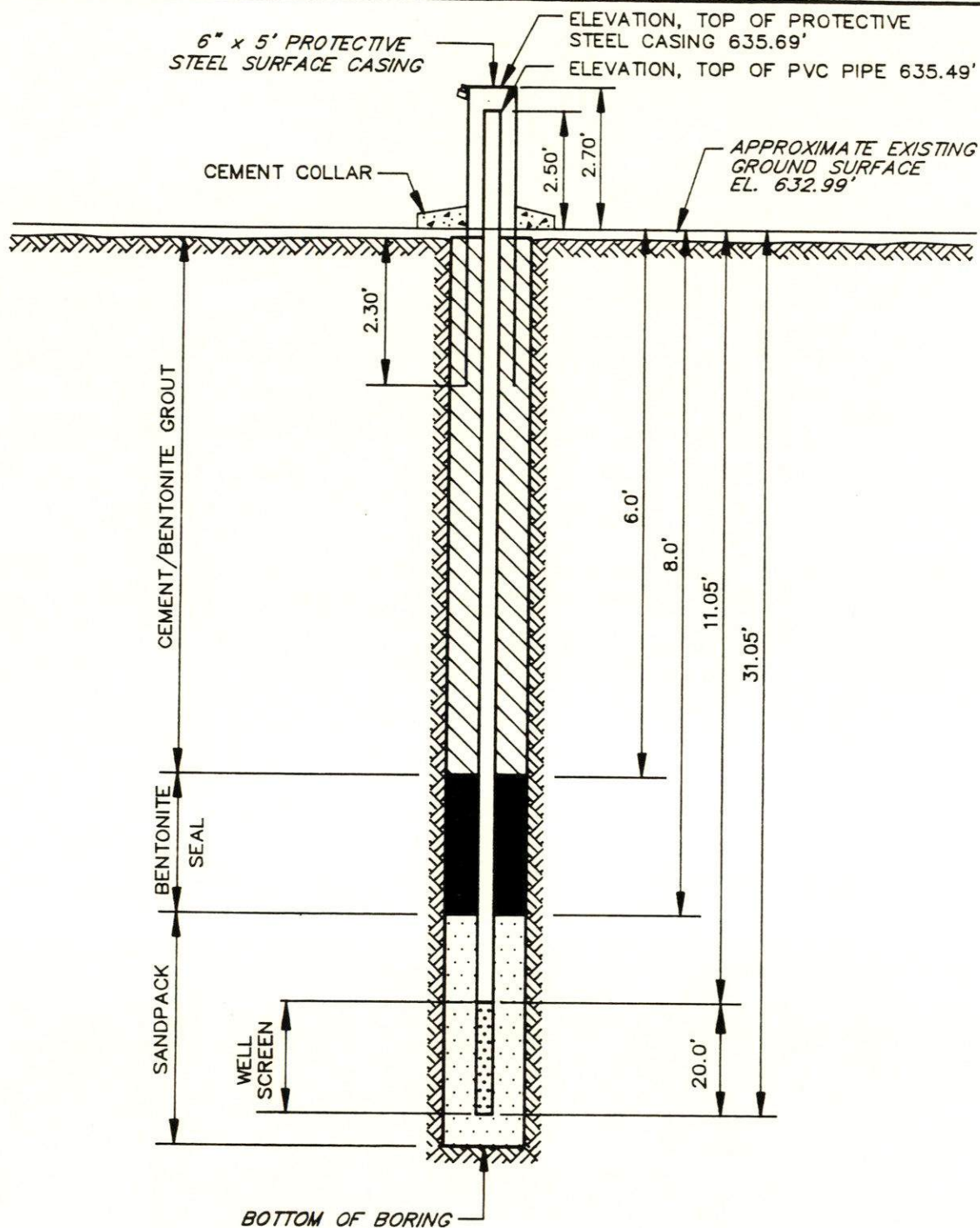
1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 624.47'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-111
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



DRAWN BY	KME	CHECKED BY	BMC	DRAWING NUMBER	303409-A22
	11-14-89	APPROVED BY	CLP	11-21-89	



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 625.12'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-112
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



DRAWING NUMBER 303409-A23

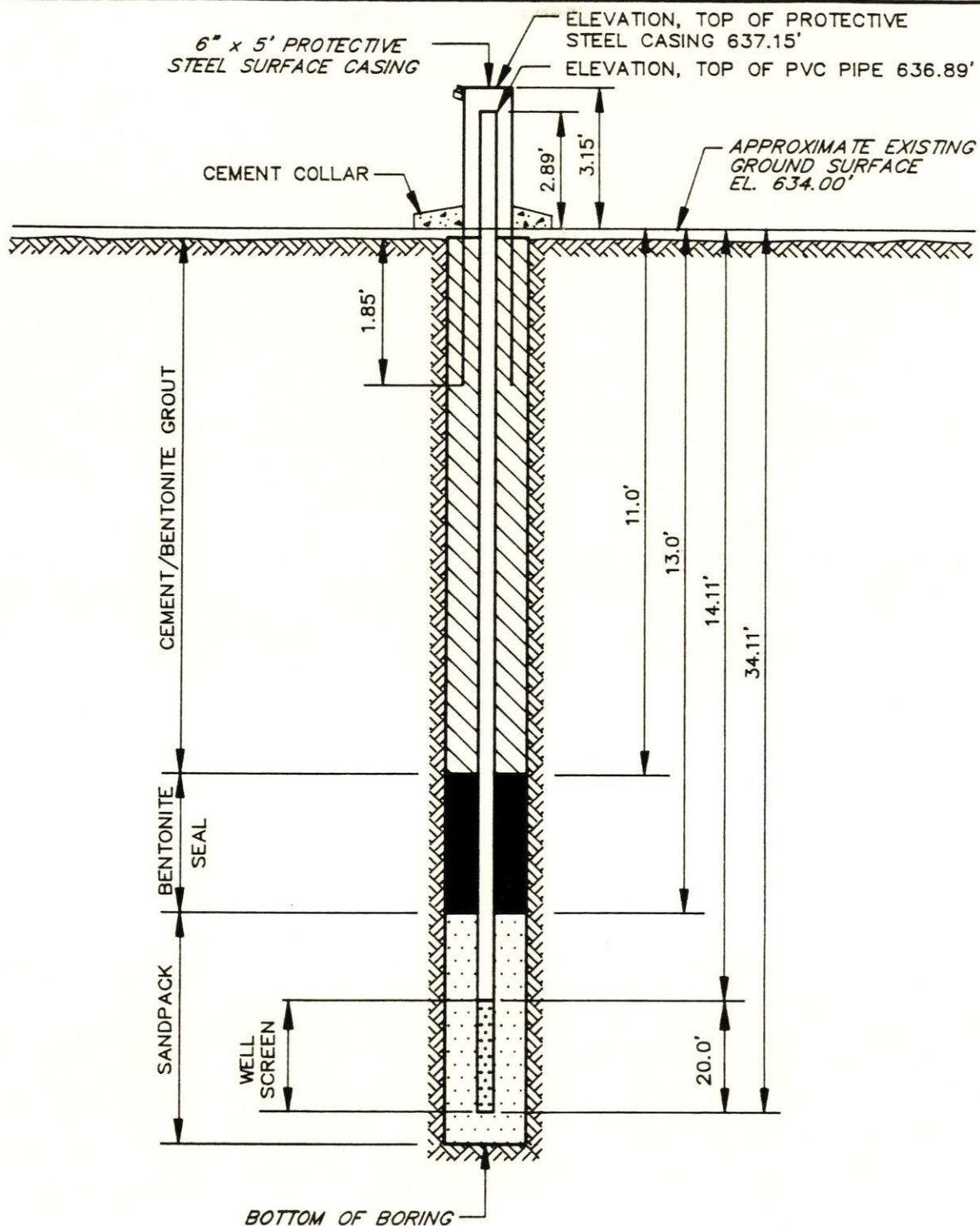
11-21-89
11-21-89

BMC
CLP

CHECKED BY
APPROVED BY

KME
11-14-89

DRAWN BY



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 623.59'
5. WATER LEVEL READING ON 10-16-89

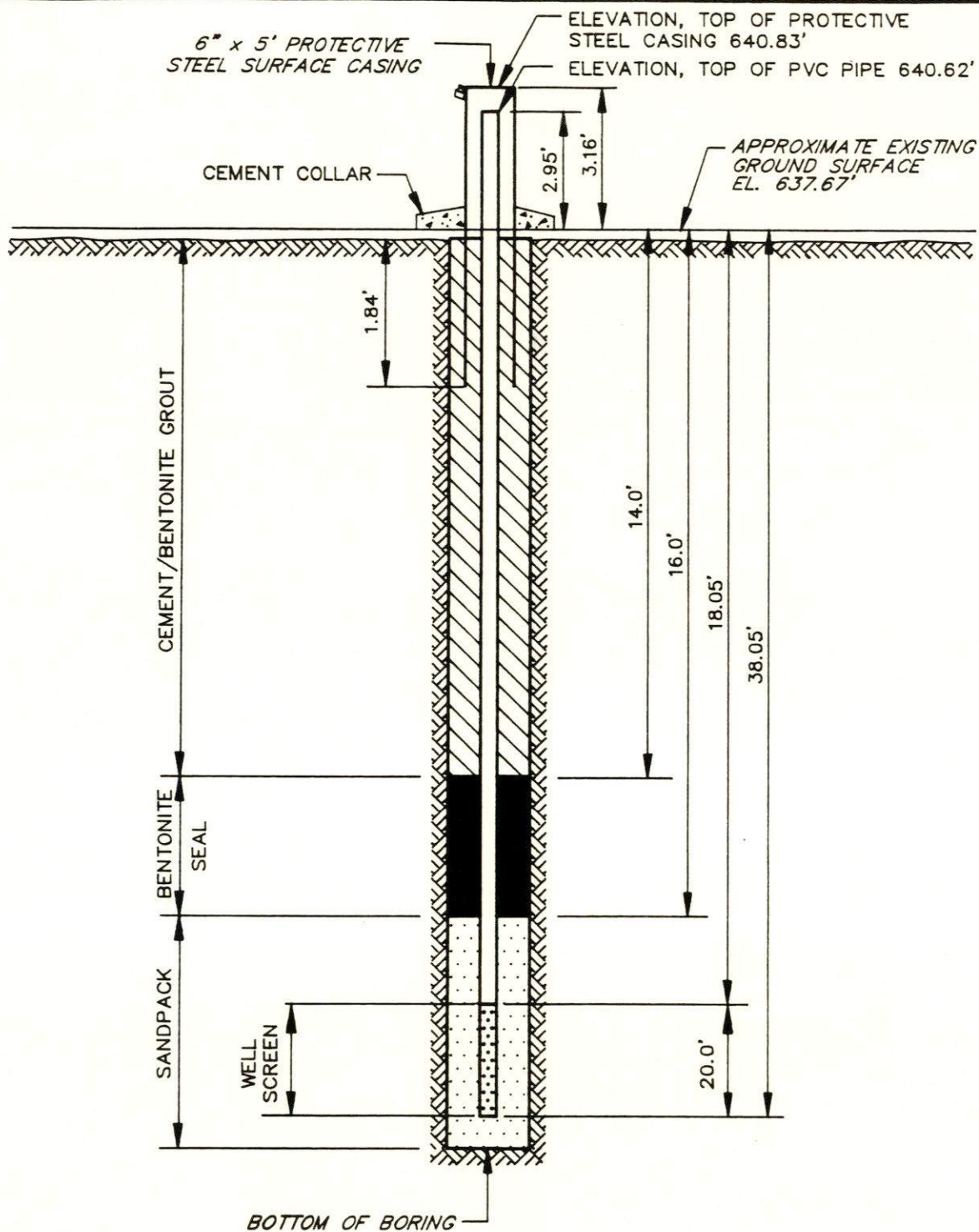
INSTALLATION DETAILS
MONITORING WELL MW-113
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWN BY	KME	CHECKED BY	BMC	DATE	11-21-89	DRAWING NUMBER	303409-A24
	11-14-89	APPROVED BY	CLP	DATE	11-21-89		



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.34'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-114
NATRIUM SITE
PREPARED FOR

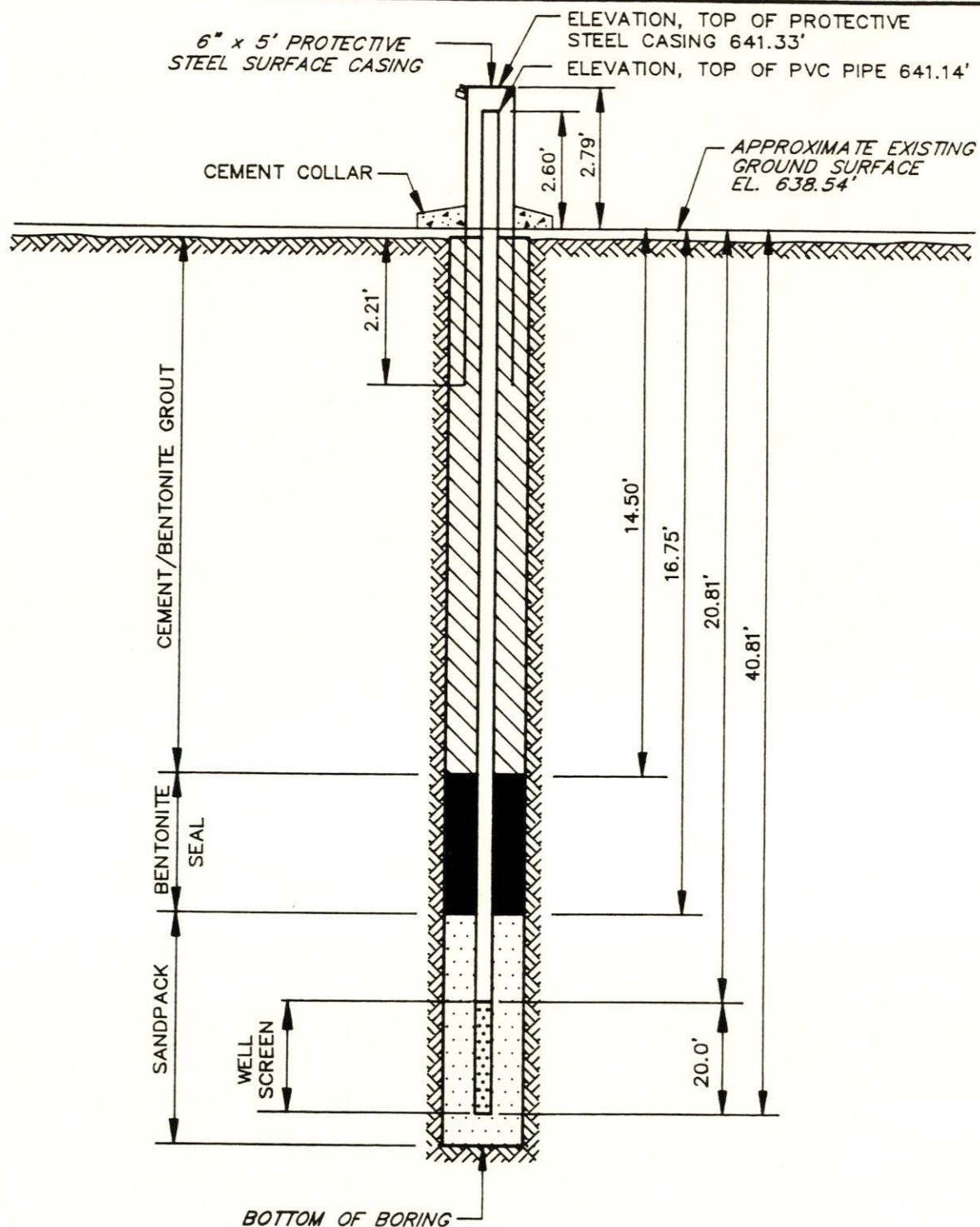
PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWN BY	KME	CHECKED BY	BMC	11-21-89	DRAWING NUMBER
	11-14-89	APPROVED BY	CLP	11-21-89	

303409-A25



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.99'
5. WATER LEVEL READING ON 10-16-89

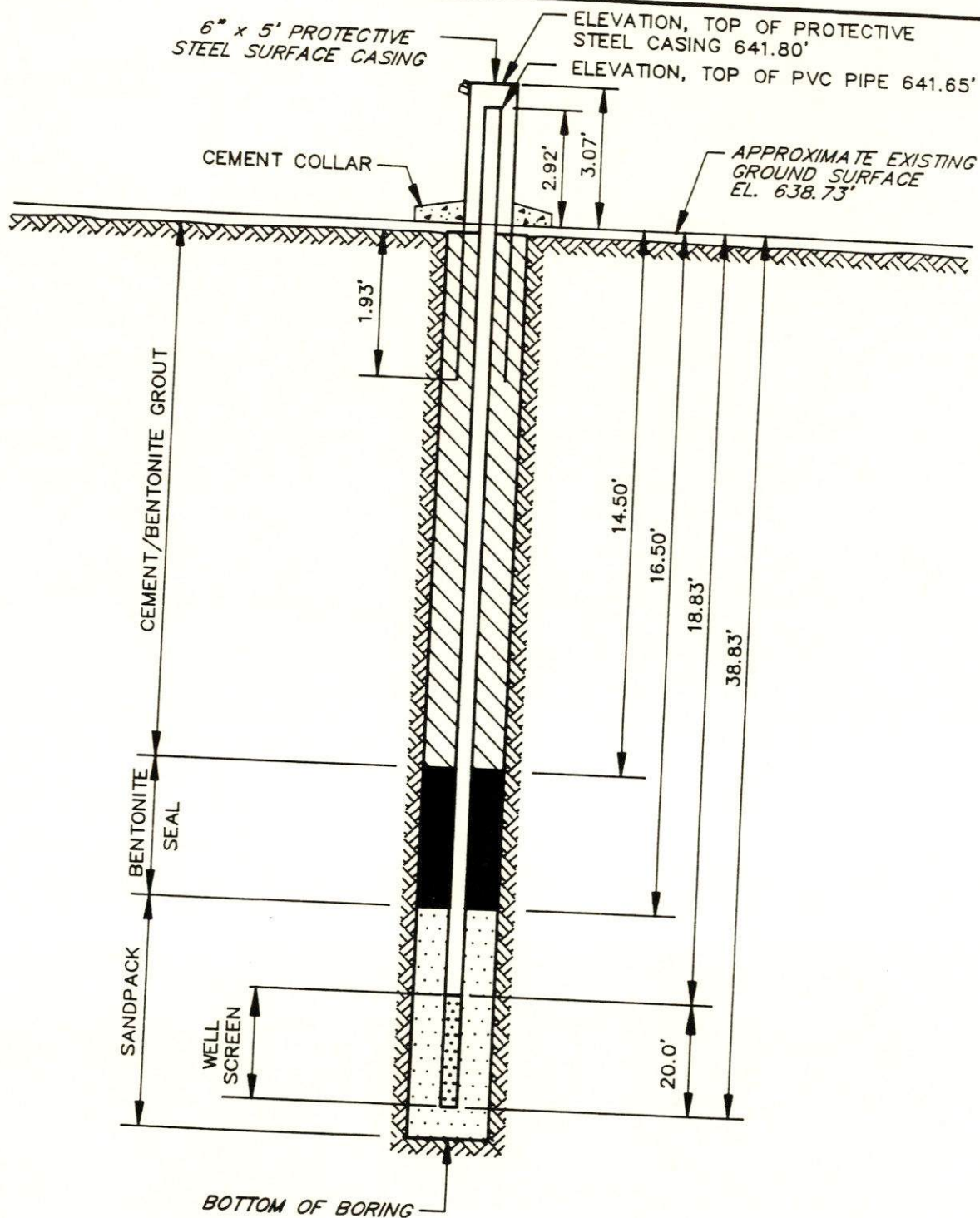
INSTALLATION DETAILS
 MONITORING WELL MW-115
 NATRIUM SITE
 PREPARED FOR

PPG INDUSTRIES, INC.
 PITTSBURGH, PENNSYLVANIA



INTERNATIONAL
 TECHNOLOGY
 CORPORATION

DRAWN BY	KME 11-14-89	CHECKED BY BMC	APPROVED BY CLP	11-21-89	DRAWING NUMBER 303409-A26
				11-21-89	



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.59'
5. WATER LEVEL READING ON 10-16-89

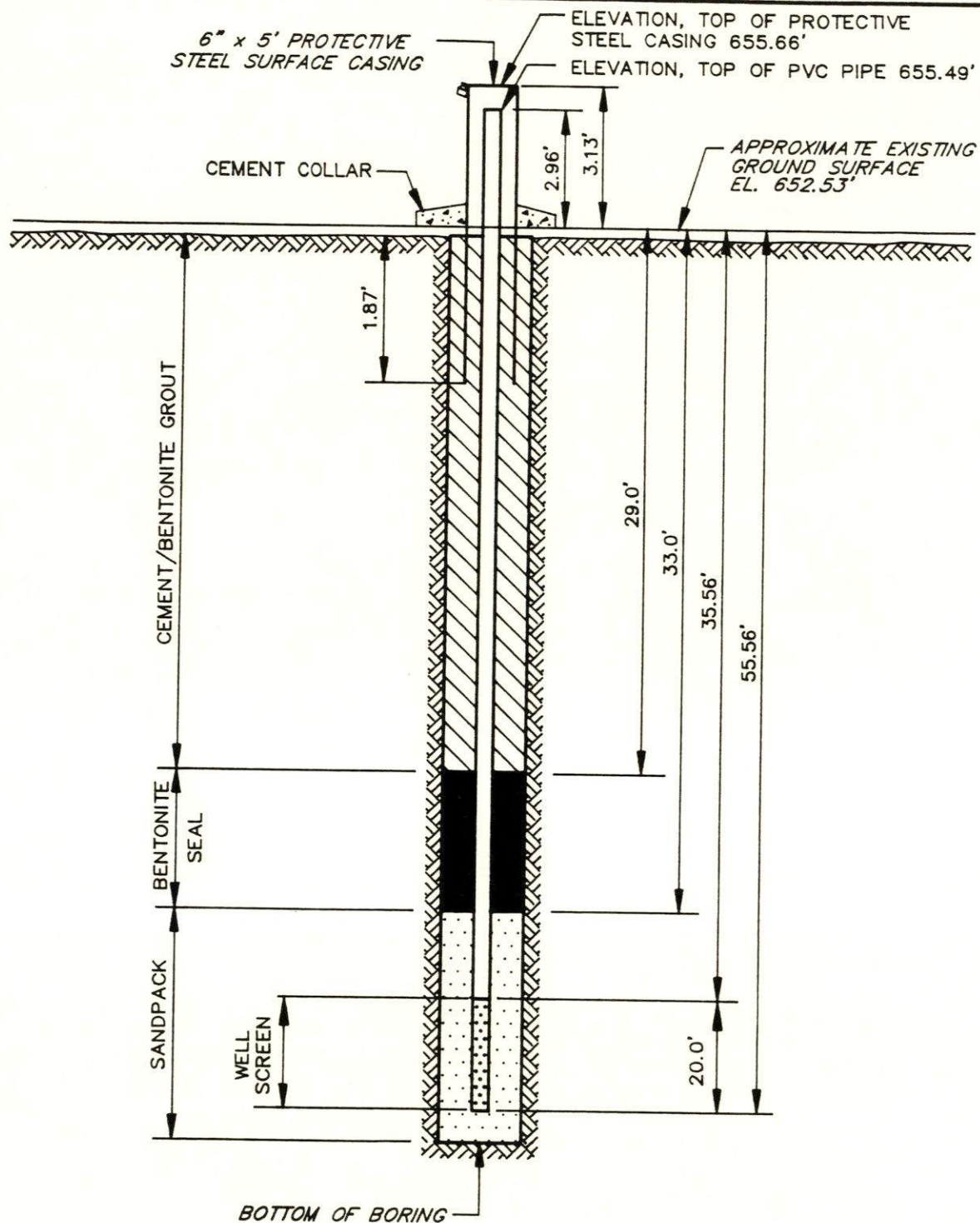
INSTALLATION DETAILS
MONITORING WELL MW-116
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

DRAWN BY	KME	CHECKED BY	BMC	11-21-89	DRAWING NUMBER
	11-14-89	APPROVED BY	CLP	11-21-89	

303409-A27



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 615.27'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-117
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

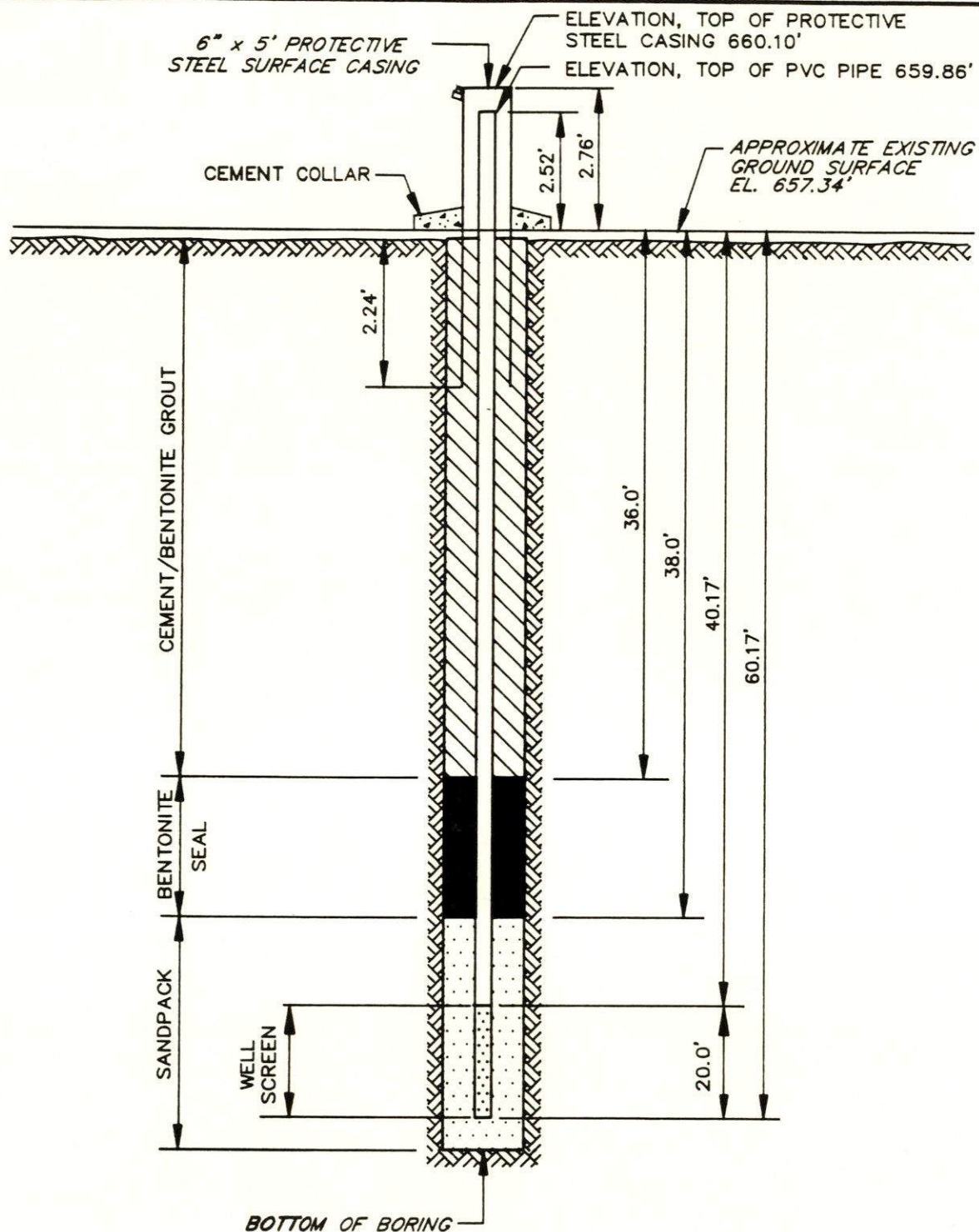
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"Do Not Scale This Drawing"

DRAWN BY	KME	CHECKED BY	BMC	11-21-89	DRAWING NUMBER	303409-A28
	11-14-89	APPROVED BY	CLP	11-21-89		



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 616.25'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-118
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

303409-A29

DRAWING
NUMBER

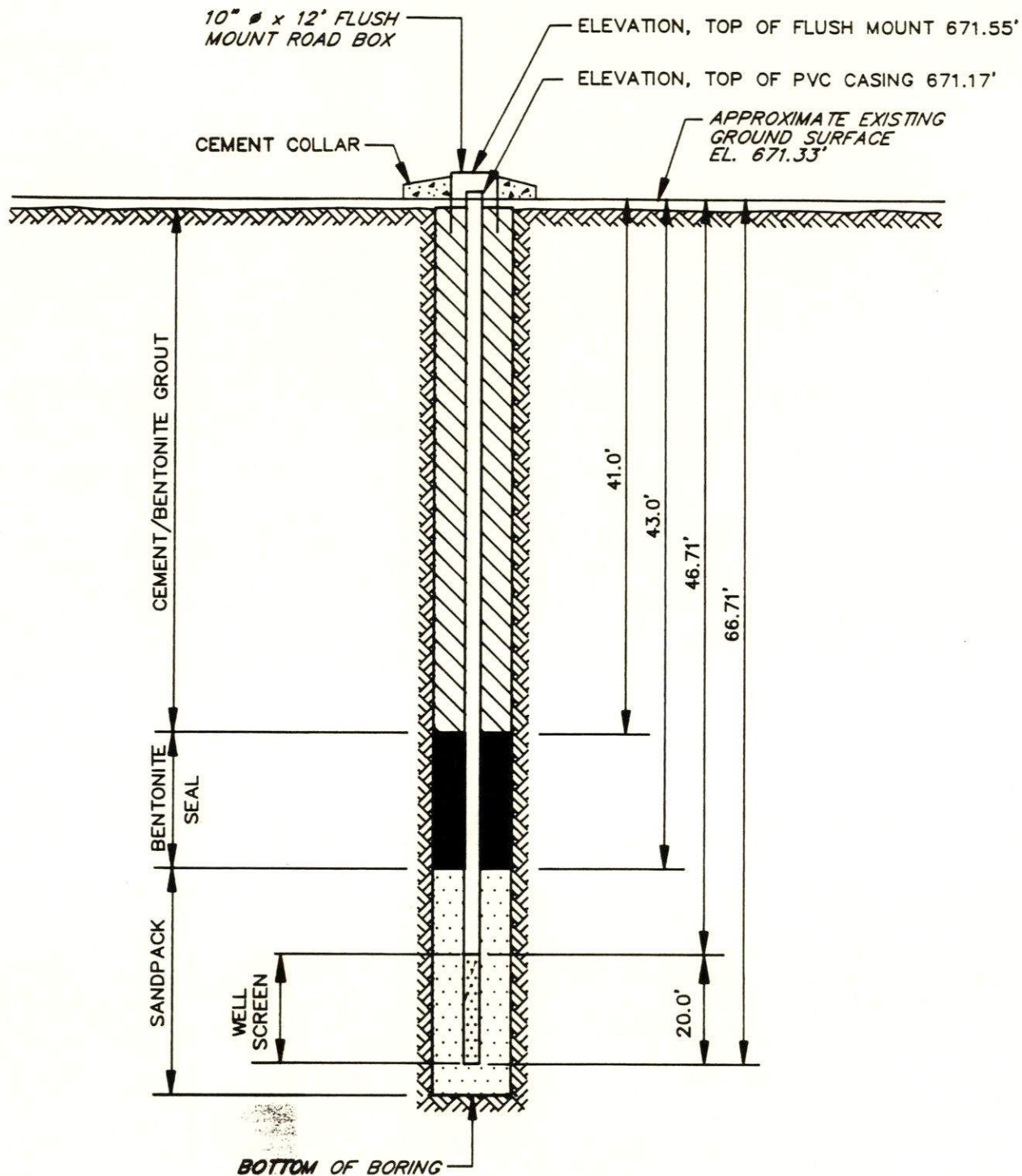
11-21-89
11-21-89

KME
11-14-89

CHECKED BY
BMC

APPROVED BY
CLP

DRAWN
BY



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 616.21'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-119
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

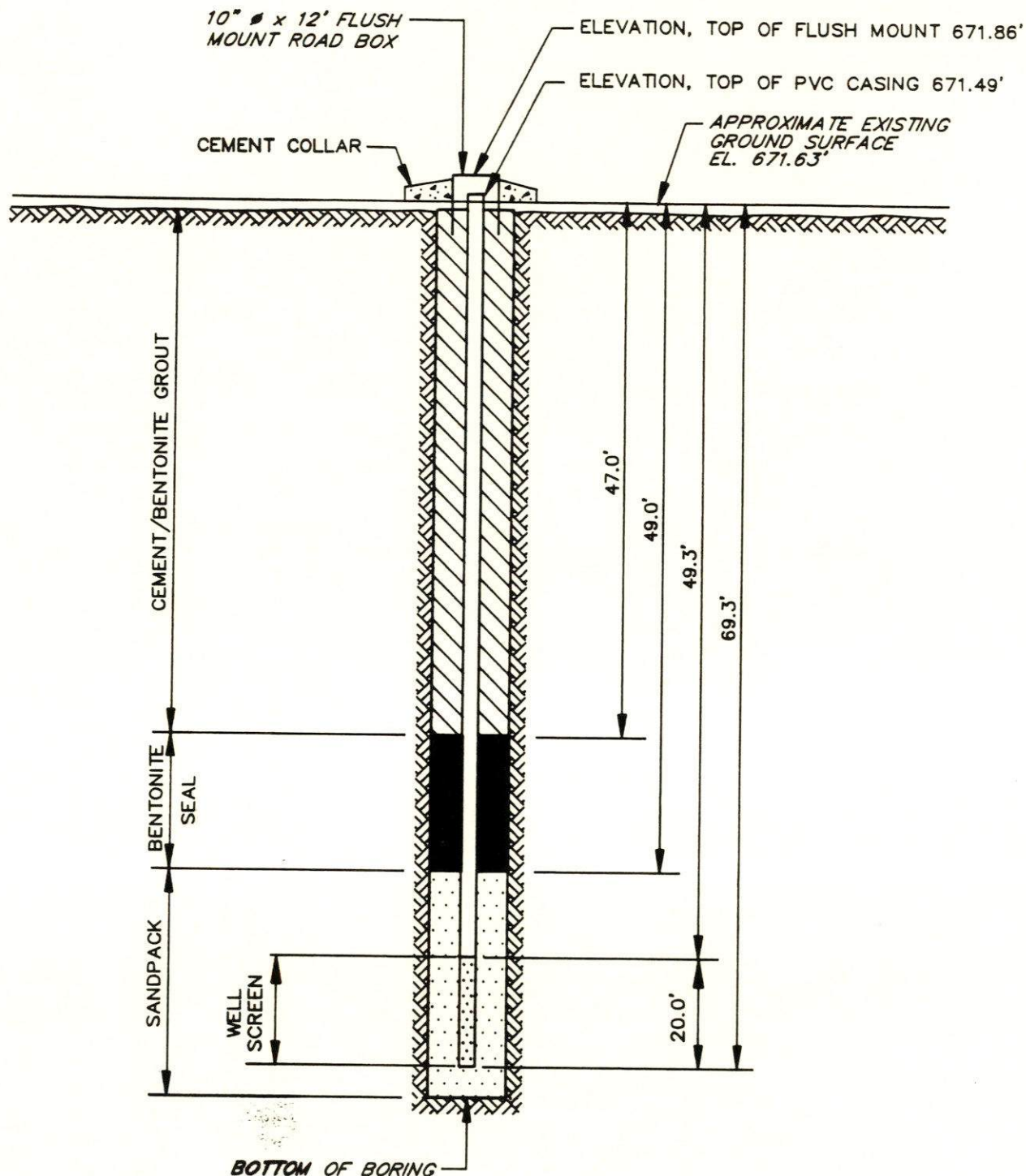
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"Do Not Scale This Drawing"

DRAWN BY	KME	CHECKED BY	BMC	11-14-89	APPROVED BY	CLP	11-21-89	DRAWING NUMBER	303409-A30



NOTES:

1. RISER PIPE IS 2 IN. I.D. SCHEDULE 40 PVC PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 2 IN I.D. PVC PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL 616.30'
5. WATER LEVEL READING ON 10-16-89

INSTALLATION DETAILS
MONITORING WELL MW-120
NATRIUM SITE
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

APPENDIX C
GRAIN SIZE ANALYSIS
FILTER PACK MATERIAL

WASH SIEVE ANALYSIS

Client IT CORP Tested By TO Date 10-23-89
 Client Project PPG NATRIUM Checked By JCM Date 10-26-89
 Project No. 89215
 Boring No. NA
 Depth(ft.) NA
 Sample No. MW-104
 Visual Description GRAYISH WHITE COARSE SAND

Wt. of Total Sample(dry) 419.99gm.
 Wt. of + #200 Sample 415.91gm.
 Wt. of - #200 Sample 4.08gm.

Sieve	Sieve Opening (mm)	Wt. of Soil Retained (gm.)	Percent Retained	Accumulated Percent Retained	Percent Finer
3"	75.00	0.00	0.00	0.00	100.0
1 1/2"	37.50	0.00	0.00	0.00	100.0
3/4"	19.00	0.00	0.00	0.00	100.0
3/8"	9.50	0.00	0.00	0.00	100.0
#4	4.75	0.00	0.00	0.00	100.0
#10	2.00	57.52	13.70	13.70	86.3
#20	0.85	268.05	63.82	77.52	22.5
#40	0.425	61.28	14.59	92.11	7.9
#60	0.250	21.60	5.14	97.25	2.7
#140	0.106	7.03	1.67	98.93	1.1
#200	0.075	0.43	0.10	99.03	1.0
Pan	-	4.08	0.97	100.00	-

Water Content

Tare No. 673
 Wgt. Tare + WS 495.79
 Wgt. Tare + DS 493.12
 Wgt. Tare 73.13
 Wgt. Of Water 2.67
 Wgt. Of DS. 419.99

% Water 0.6

CLIENT: IT CORPORATION

PROJECT NO. 89215

DEPTH (FT.): NA

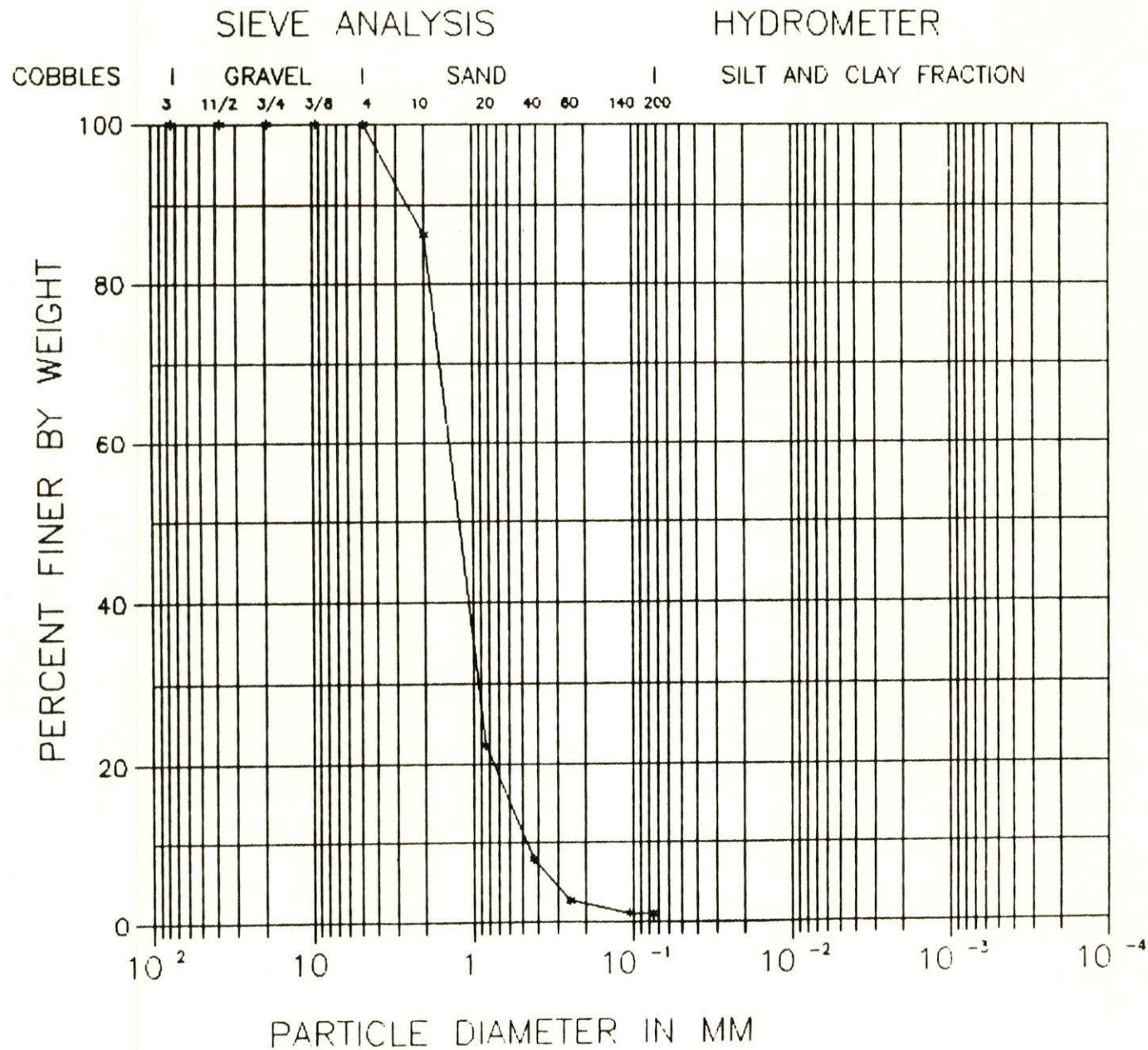
DESCRIPTION: GRAYISH WHITE POORLY GRADED SAND

USCS CLASSIFICATION SP

CLIENT PROJECT: PPG NATRIUM

BORING NO. MW-104

SAMPLE NO. NA



APPENDIX D
LABORATORY RESULTS

CERTIFICATE OF ANALYSIS

IT Corporation/PPG Natrium
2790 Mosside Boulevard
Monroeville, PA 15146
Attn: B. Halden

November 20, 1989

Job Number: P910218

The Certificate of Analysis is for the following:

Client Project ID: 302³409
Date Received by Lab: 10/19/89
Number of Samples: Fourteen
Sample Type: Water

I. Introduction

On October 19, 1989, fourteen water samples were received at ITAS Pittsburgh, labeled as follows:

MW-32	MW-103	MW-105	MW-118	MW-120
MW-101	MW-104	MW-110	MW-118R	Trip Blank 10/18/89
MW-102	MW-104-2	MW-111	MW-119	

II. Analytical Results/Methodology


Results are presented in the enclosed tables and were determined in accordance with recommended analytical procedures.

Results are based on sample concentration and expressed in milligrams per liter or parts per million and micrograms per liter or parts per billion. ND denotes that the compound is not detected at or above the indicated detection limit. Duplicate results indicate duplicate analyses.

III. Quality Control

QA/QC information can be found immediately following the analytical data.

Reviewed and Approved:


Steven H. Cochenour, Project Manager

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Method Reference:

Sample Preparation,
Water

Environmental Protection Agency, Contract
Laboratory Program, Statement of Work No.
787, Section IV, Exhibit-D, Part A, July,
1988.

Inductively Coupled
Plasma-Atomic Emission
Spectrometric Method
for Trace Element
Analysis of Water
and Waste

Method 200.7, Methods for the Chemical
Analysis of Water and Waste, United
States Environmental Protection Agency,
600/4-79-020, 1983 revision.

Arsenic (Atomic
Absorption, Furnace
Technique)

Method 206.2, Methods for the Chemical
Analysis of Water and Waste, United
States Environmental Protection Agency,
600/4-79-020, 1983 revision.

Selenium (Atomic
Absorption, Furnace
Technique)

Method 270.2, Methods for the Chemical
Analysis of Water and Waste, United
States Environmental Protection Agency,
600/4-79-020, 1983 revision.

Mercury (Manual Cold
Vapor Technique)

Method 245.1, Methods for the Chemical
Analysis of Water and Waste, United
States Environmental Protection Agency,
600/4-79-020, 1983 revision.

Total Organic Carbon

Method 9060, Test Methods for Evaluating
Solid Waste, USEPA SW-846, 3rd Edition, 1986.

Total Organic Halides

Method 9020, Test Methods for Evaluating
Solid Waste, USEPA SW-846, 3rd Edition, 1986.

Gas Chromatograph/
Mass Spectrometry
for Volatile Organics

Method 8240, Test Methods for Evaluating
Solid Waste, USEPA SW-846, 3rd Edition, 1986.

Gas Chromatograph/
Mass Spectrometry for
Semivolatile Organics:
Capillary Column
Technique

Method 8270, Test Methods for Evaluating
Solid Waste, USEPA SW-846, 3rd Edition, 1986.

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Total Organic Carbon Analysis

Client Sample ID: See Below
Sample Date: 10/18/89
Analysis Date: TOC: 11/6/89
TOX: 10/31/89

Client Sample ID:	Total Organic Carbon	Total Organic Halides
	Concentration mg/L	
MW-103	7/7	0.09/0.09
MW-104	5/5	0.06/ND0.05
MW-104-2	5/5	0.07/0.06
MW-105	9/9	ND0.05/ND0.05

MW-104	Total Organic Halides Matrix Spike Percent Recovery
	107%/108%

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910218

Total Metals Analysis

Client Sample ID: MW-101
Sample Date: 10/18/89
Analysis Date: 11/8/89

Parameter	Concentration mg/L	Analytical Spike Percent Recovery
Arsenic	0.01	100%
Cadmium	ND0.005	--
Chromium	0.32	--

Client Sample ID: MW-102
Sample Date: 10/18/89
Analysis Date: 11/8/89

Parameter	Concentration mg/L
Arsenic	0.03
Cadmium	ND0.005
Chromium	0.37

Client Sample ID: MW-103
Sample Date: 10/18/89
Analysis Date: 11/8,9/89
Mercury: 11/3/89

Parameter	Concentration mg/L	Matrix Spike Percent Recovery
Arsenic	0.14	--
Barium	0.4	--
Chromium	0.16	--
Iron	250	--
Lead	0.65	--
Mercury	0.0041/0.0045	118%
Selenium	ND0.005	--

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Total Metals Analysis

Client Sample ID: MW-104
Sample Date: 10/18/89
Analysis Date: 11/8,9/89
Mercury: 11/3/89

Parameter	Concentration mg/L
Arsenic	ND0.1
Barium	17
Chromium	0.65
Iron	1400
Lead	1.0
Mercury	ND0.0005
Selenium	ND0.005

Client Sample ID: MW-104-2
Sample Date: 10/18/89
Analysis Date: 11/8,13/89
Mercury: 11/3/89

Parameter	Concentration mg/L
Arsenic	ND0.1
Barium	18
Chromium	1.3
Iron	1800
Lead	2.0
Mercury	0.0008
Selenium	ND0.005

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 30³2409

Job Number: P910218

Total Metals Analysis

Client Sample ID: MW-105
Sample Date: 10/18/89
Analysis Date: 11/8,13/89
Mercury: 11/3/89

Parameter	Concentration mg/L	Analytical Spike Percent Recovery
Arsenic	0.15	--
Barium	3.4	103%
Chromium	0.3	108%
Iron	420	104%
Lead	0.9	106%
Mercury	0.0012	--
Selenium	ND0.005	--

Client Sample ID: MW-110
Sample Date: 10/18/89
Analysis Date: 11/13/89

Parameter	Concentration mg/L
Lead	0.35

Client Sample ID: MW-111
Sample Date: 10/18/89
Analysis Date: 11/13/89

Parameter	Concentration mg/L
Lead	0.13

Client Sample ID: MW-118
Sample Date: 10/18/89
Analysis Date: 11/8/89

Parameter	Concentration mg/L
Mercury	0.21

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 30³409

Job Number: P910218

Total Metals Analysis

Client Sample ID: MW-118R
Sample Date: 10/18/89
Analysis Date: 11/3/89

Parameter	Concentration mg/L
Mercury	0.0012

Client Sample ID: MW-119
Sample Date: 10/18/89
Analysis Date: 11/8/89

Parameter	Concentration mg/L
Mercury	0.43

Client Sample ID: MW-120
Sample Date: 10/18/89
Analysis Date: 11/8/89

Parameter	Concentration mg/L
Mercury	0.31

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Total Metals Analysis

Lab Sample ID: Prep Blank (10-25-3)
Analysis Date: 11/8,9/89
Mercury: 11/3/89

Parameter	Concentration mg/L
Barium	ND0.2
Cadmium	ND0.005
Chromium	ND0.01
Iron	ND0.1
Lead	ND0.05

Lab Sample ID: Prep Blank (10-25-4)
Analysis Date: 11/8/89

Parameter	Concentration mg/L
Arsenic	ND0.01
Selenium	ND0.005

Lab Sample ID: Prep Blank #3
Analysis Date: 11/13/89

Parameter	Concentration mg/L
Mercury	ND0.0002

Lab Sample ID: Prep Blank #5
Analysis Date: 11/13/89

Parameter	Concentration mg/L
Mercury	ND0.0002

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Selected Volatile Organic Compounds

Client Sample ID: MW-32
Sample Date: 10/18/89
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethylene	ND5
Benzene	ND5
Tetrachloroethylene	ND5
Chlorobenzene	ND5
o-Dichlorobenzene	ND50
m-Dichlorobenzene	ND50
p-Dichlorobenzene	ND50

Client Sample ID: MW-101
Sample Date: 10/18/89
Analysis Date: 10/30/89

Parameter	Concentration µg/L
Methylene Chloride	ND50
Chloroform	1500
1,1,1,-Trichloroethane	ND50
Carbon Tetrachloride	ND50
Trichloroethylene	ND50
Benzene	ND50
Tetrachloroethylene	140
Chlorobenzene	410

Client Sample ID: MW-102
Sample Date: 10/18/89
Analysis Date: 10/30/89

Parameter	Concentration µg/L
Methylene Chloride	ND100
Chloroform	1600
1,1,1,-Trichloroethane	ND100
Carbon Tetrachloride	ND100
Trichloroethylene	750
Benzene	ND100
Tetrachloroethylene	200
Chlorobenzene	300

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Selected Volatile Organic Compounds

Client Sample ID: MW-110
Sample Date: 10/18/89
Analysis Date: 10/30/89

Parameter	Concentration μg/L
Chloroform	2600
Carbontetrachloride	ND100
Trans-1,2-dichloroethylene	110
Bromodichloromethane	ND100
Trichloroethylene	110
Tetrachloroethylene	430
Benzene	ND100

Client Sample ID: MW-111
Sample Date: 10/18/89
Analysis Date: 10/30/89

Parameter	Concentration μg/L
Chloroform	ND5
Carbontetrachloride	ND5
Trans-1,2-dichloroethylene	ND5
Bromodichloromethane	ND5
Trichloroethylene	ND5
Tetrachloroethylene	ND5
Benzene	ND5

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Selected Volatile Organic Compounds

Client Sample ID: Trip Blank 10/18/89
Sample Date: 11/18/89
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethylene	ND5
Benzene	ND5
Tetrachloroethylene	ND5
Chlorobenzene	ND5
o-Dichlorobenzene	ND50
m-Dichlorobenzene	ND50
p-Dichlorobenzene	ND50

Lab Sample ID: Method Blank 2
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Trans-1,2-dichloroethylene	ND5
Bromodichloromethane	ND5
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethylene	ND5
Benzene	ND5
Tetrachloroethylene	ND5
Chlorobenzene	ND5
o-Dichlorobenzene	ND50
m-Dichlorobenzene	ND50
p-Dichlorobenzene	ND50

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Selected Volatile Organic Compounds

Lab Sample ID: Method Blank 5
Analysis Date: 10/30/89

Parameter	Concentration μg/L
Trans-1,2-dichloroethylene	ND5
Bromodichloromethane	ND5
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethylene	ND5
Benzene	ND5
Tetrachloroethylene	ND5
Chlorobenzene	ND5

Lab Sample ID: Method Blank 7
Analysis Date: 10/30/89

Parameter	Concentration μg/L
Trans-1,2-dichloroethylene	ND5
Bromodichloromethane	ND5
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethylene	ND5
Benzene	ND5
Tetrachloroethylene	ND5
Chlorobenzene	ND5

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Volatile Surrogate Spike Percent Recovery

Client Sample ID:	4-Bromofluorobenzene (86-115%)*	1,2-Dichloroethane-d ₄ (76-114%)	Toluene-d ₈ (88-110%)
MW-32	89%	90%	102%
MW-101	89%	92%	90%
MW-102	93%	86%	92%
MW-110	89%	89%	88%
MW-111	101%	97%	102%
Trip Blank 10-18-89	91%	88%	102%
Method Blank 2	90%	94%	104%
Method Blank 5	88%	91%	95%
Method Blank 7	101%	100%	99%

*Values in parenthesis represent USEPA Contract required QC limits.

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910218

Selected Semivolatile Organic Compounds

Lab Sample ID: MW-101
Sample Date: 10/18/89
Extraction Date: 10/24/89
Analysis Date: 10/27/89

Parameter	Concentration µg/L
1,2,4-Trichlorobenzene	64
Benzo(a)anthracene	ND20
Benzo(b)anthracene	ND20
Benzo(a)pyrene	ND20
2-Chloronaphthalene	ND20
1,2-Dichlorobenzene	260
1,3-Dichlorobenzene	ND20
1,4-Dichlorobenzene	180
7,12-Dimethylbenz(a)anthracene	ND100
3-Methylcholanthrene	ND100
Naphthalene	ND20
Dibenzo(a,h)anthracene	ND20
Fluoranthene	ND20

Lab Sample ID: MW-102
Sample Date: 10/18/89
Extraction Date: 10/24/89
Analysis Date: 10/27/89

Parameter	Concentration µg/L
1,2,4-Trichlorobenzene	230
Benzo(a)anthracene	ND200
Benzo(b)anthracene	ND200
Benzo(a)pyrene	ND200
2-Chloronaphthalene	ND200
1,2-Dichlorobenzene	2000
1,3-Dichlorobenzene	ND200
1,4-Dichlorobenzene	2000
7,12-Dimethylbenz(a)anthracene	ND1000
3-Methylcholanthrene	ND1000
Naphthalene	ND200
Dibenzo(a,h)anthracene	ND200
Fluoranthene	ND200

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Selected Semivolatile Organic Compounds

Lab Sample ID: Method Blank
Extraction Date: 10/24/89
Analysis Date: 10/26/89

Parameter	Concentration μg/L
1,2,4-Trichlorobenzene	ND10
Benzo(a)anthracene	ND10
Benzo(b)anthracene	ND10
Benzo(a)pyrene	ND10
2-Chloronaphthalene	ND10
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	ND10
7,12-Dimethylbenz(a)anthracene	ND50
3-Methylcholranthrene	ND50
Naphthalene	ND10
Dibenzo(a,h)anthracene	ND10
Fluoranthene	ND10

PPG Natrium
Date: 11/20/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910218

Semivolatile Organic Percent Recovery

Client Sample ID:	2-Fluorobiphenyl (43-116%)*	Nitrobenzene-d ₅ (35-114%)	Terphenyl-d ₁₄ (33-141%)
MW-101	78%	70%	48%
MW-102	75%	81%	39%
Method Blank 10/24/89	68%	64%	90%

*Values in parenthesis represent USEPA Contract required QC limits.

CERTIFICATE OF ANALYSIS

IT Corporation/PPG Natrium
2790 Mosside Boulevard
Monroeville, PA 15146
Attn: B. Halden

November 15, 1989

Job Number: P910192

The Certificate of Analysis is for the following:

Client Project ID: 30³/409
Date Received by Lab: 10/17/89
Number of Samples: Fourteen
Sample Type: Water

I. Introduction

On October 17, 1989, fourteen water samples were received at ITAS Pittsburgh, labeled as follows:

MW-5	MW-107	MW-112	MW-114-2	MW-117
MW-100	MW-108	MW-113	MW-115	Trip Blank 10/15/89
MW-106	MW-109	MW-114	MW-116	

II. Analytical Results/Methodology

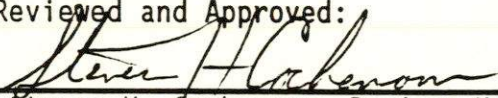
Results are presented in the enclosed tables and were determined in accordance with recommended analytical procedures.

Results are based on sample concentration and expressed in milligrams per liter or parts per million and micrograms per liter or parts per billion. ND denotes that the compound is not detected at or above the indicated detection limit. Duplicate results indicate duplicate analyses.

III. Quality Control

QA/QC information can be found immediately following the analytical data.

Reviewed and Approved:


Steven H. Cochenour, Project Manager

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 30³2409

Job Number: P910192

Method Reference:

Sample Preparation, Water	<u>Environmental Protection Agency, Contract Laboratory Program, Statement of Work No. 787, Section IV, Exhibit-D, Part A, July, 1988.</u>
Inductively Coupled Plasma-Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Waste	<u>Method 200.7, Methods for the Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 600/4-79-020, 1983 revision.</u>
Arsenic (Atomic Absorption, Furnace Technique)	<u>Method 206.2, Methods for the Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 600/4-79-020, 1983 revision.</u>
Alkalinity	<u>Method 403, Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 16th Edition, 1985.</u>
Sulfate, (Turbidimetric)	<u>Method 375.4, Methods for the Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 600/4-79-020, 1983 revision.</u>
pH (electrometric)	<u>Method 150.1, Methods for the Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 600/4-79-020, 1983 revision.</u>
Total Organic Carbon	<u>Method 9060, Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition, 1986.</u>

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 30³2409

Job Number: P910192

General Chemistry Analysis

Client Sample ID: See Below
Sampled By: CP/DS
Sample Date: 11/16,17/89
Analysis Date: 10/17,19; 11/1/89

Client Sample ID:	pH --	Alkalinity mg/L	Sulfate mg/L
MW-112	5.47/5.46	6	480
MW-113	5.80	12	120
MW-114	6.26	130/140	140
MW-114-2	6.30	140	150
MW-115	12.09	2000/2000	2
MW-116	8.77	200	69

Alkalinity Matrix Spike Percent Recovery

MW-115	98%
MW-116	97%

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910192

Total Organic Carbon Analysis

Client Sample ID: See Below
Sampled By: CP/DS
Sample Date: 11/17/89
Analysis Date: 11/4/89

Client Sample ID:	Total Organic Carbon mg/L
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MW-106	7/7
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MW-107	4/4
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MW-108	6/6
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MW-109	4/4
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Matrix Spike Percent Recovery

MW-109	104%/105%
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PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 30³2409

Job Number: P910192

Total Metals Analysis

Client Sample ID: See Below
Sampled By: CP/DS
Sample Date: 11/16,17/89
Analysis Date: 10/31/89

Client Sample ID:	Arsenic	Cadmium Concentration mg/L	Chromium
MW-5	ND0.01	0.023	0.05
MW-100	ND0.01/ND0.01	ND0.005	0.03
Method Blank	ND0.01	ND0.005	ND0.01

Client Sample ID:	Barium	Iron Concentration mg/L	Lead
MW-106	23	--	1.1
MW-107	12	--	0.51
MW-108	18	--	1.7
MW-109	13	--	0.89
MW-112	1.3	160	--
MW-113	0.3	50	--
MW-114	1.3	160	--
MW-114-2	1.2	170	--
MW-115	0.9	5.7	--
MW-116	3.9	470	--
Method Blank	ND0.2	ND0.1	ND0.05

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910192

Total Metals Percent Recovery

Client Sample ID:	Parameter	Analytical Spike Percent Recovery	Matrix Spike Percent Recovery
MW-107	Barium	104%	--
MW-107	Lead	96%	--
MW-100	Arsenic	91%	75%

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 30³/409

Job Number: P910192

Selected Volatile Organic Compounds

Client Sample ID: MW-5
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/30/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethene	44
Benzene	ND5
Tetrachloroethene	8
Chlorobenzene	ND5

Client Sample ID: MW-100
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/30/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	120
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	15
Trichloroethene	60
Benzene	ND5
Tetrachloroethene	200
Chlorobenzene	ND5

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302³409

Job Number: P910192

Selected Volatile Organic Compounds

Client Sample ID: MW-106
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/28/89

Parameter	Concentration µg/L
Carbon Tetrachloride	ND5
Benzene	ND5

Client Sample ID: MW-107
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/30/89

Parameter	Concentration µg/L
Carbon Tetrachloride	ND5
Benzene	ND5

Client Sample ID: MW-108
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Carbon Tetrachloride	ND5
Benzene	ND5

Client Sample ID: MW-109
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Carbon Tetrachloride	ND5
Benzene	ND5

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910192

Selected Volatile Organic Compounds

Client Sample ID: MW-117
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethene	27
Benzene	ND5
Tetrachloroethene	32
Chlorobenzene	ND5
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	ND10

Client Sample ID: Trip Blank 10/15/89
Sampled By: CD/DS
Sample Date: 11/15/89
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethene	ND5
Benzene	ND5
Tetrachloroethene	ND5
Chlorobenzene	ND5
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	ND10

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910192

Selected Volatile Organic Compounds

Lab Sample ID: Method Blank
Analysis Date: 10/28/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethene	ND5
Benzene	ND5
Tetrachloroethene	ND5
Chlorobenzene	ND5
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	ND10

Lab Sample ID: Method Blank
Analysis Date: 10/29/89

Parameter	Concentration µg/L
Methylene Chloride	ND5
Chloroform	ND5
1,1,1,-Trichloroethane	ND5
Carbon Tetrachloride	ND5
Trichloroethene	ND5
Benzene	ND5
Tetrachloroethene	ND5
Chlorobenzene	ND5

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910192

Volatile Surrogate Spike Percent Recovery

Client Sample ID:	4-Bromofluorobenzene (86-115%)*	1,2-Dichloroethane-d ₄ (76-114%)	Toluene-d ₈ (88-110%)
MW-5	101%	108%	108%
MW-100	99%	104%	108%
MW-106	93%	91%	97%
MW-107	106%	94%	98%
MW-108	88%	92%	104%
MW-109	92%	94%	102%
MW-117	90%	91%	102%
Trip Blank 10/15/89	90%	92%	102%
Method Blank 10/28/89	103%	100%	104%
Method Blank 10/29/89	90%	94%	104%

*Values in parenthesis represent USEPA Contract required QC limits.

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910192

Selected Semivolatile Organic Compounds

Client Sample ID: MW-5
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/26/89

Parameter	Concentration µg/L
1,2,4-Trichlorobenzene	ND10
Benzo(a)Anthracene	ND10
Benzo(b)Fluoranthene	ND10
Benzo(a)Pyrene	ND10
2-Chloronaphthalene	ND10
7,12-Dimethylbenz(a)Anthracene	ND10
3-Methylchloranthrene	ND10
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	ND10
Naphthalene	ND10
Dibenzo(a,h)anthracene	ND10
Fluoranthene	ND10

Client Sample ID: MW-100
Sampled By: CD/DS
Sample Date: 11/17/89
Analysis Date: 10/26/89

Parameter	Concentration µg/L
1,2,4-Trichlorobenzene	ND10
Benzo(a)Anthracene	ND10
Benzo(b)Fluoranthene	ND10
Benzo(a)Pyrene	ND10
2-Chloronaphthalene	ND10
7,12-Dimethylbenz(a)Anthracene	ND10
3-Methylchloranthrene	ND10
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	13
Naphthalene	ND10
Dibenzo(a,h)anthracene	ND10
Fluoranthene	ND10

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910192

Selected Semivolatile Organic Compounds

Lab Sample ID: Method Blank
Analysis Date: 10/23/89

Parameter	Concentration μg/L
1,2,4-Trichlorobenzene	ND10
Benzo(a)Anthracene	ND10
Benzo(b)Fluoranthene	ND10
Benzo(a)Pyrene	ND10
2-Chloronaphthalene	ND10
7,12-Dimethylbenz(a)Anthracene	ND10
3-Methylchloranthrene	ND10
1,2-Dichlorobenzene	ND10
1,3-Dichlorobenzene	ND10
1,4-Dichlorobenzene	ND10
Naphthalene	ND10
Dibenzo(a,h)anthracene	ND10
Fluoranthene	ND10

PPG Natrium
Date: 11/15/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910192

Semivolatile Organic Percent Recovery

Client Sample ID:	2-Fluorobiphenyl (43-116%)*	Nitrobenzene-d ₅ (35-114%)	Terphenyl-d ₁₄ (33-141%)
MW-5	83%	72%	55%
MW-100	79%	64%	37%
Method Blank 10/23/89	85%	77%	87%

*Values in parenthesis represent USEPA Contract required QC limits.

CERTIFICATE OF ANALYSIS

IT Corporation/PPG Natrium
2790 Mosside Blvd.
Monroeville, PA 15146
Attn: Joe Burdick

October 24, 1989

Job Number: P910213

The Certificate of Analysis is for the following:

Client Project ID: 30³2409
Date Received by Lab: 10/19/89
Number of Samples: Five
Sample Type: Soil

I. Introduction

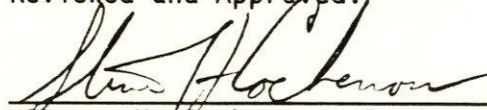
On October 19, 1989, five soil samples were received at ITAS Pittsburgh, labeled as follows:

SB101 7-9' MW-121 7-9'
SB102 6-8' MW-122 7-9'
SB103 7-9'

II. Analytical Results/Methodology

Results are presented in the enclosed table and were determined in accordance with Method 9045, Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition, 1986.

Reviewed and Approved:


Steven H. Cochenour, Project Manager

PPG, Natrium
Date: 10/24/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P910213

Geo-Chemical Analysis

Analysis Date: 10/23/89

Client Sample ID:	1:1 pH
SB101 7-9'	5.75/5.60
SB102 6-8'	5.30
SB103 7-9'	5.80
MW-121 7-9'	6.40
MW-122 7-9'	5.30

CERTIFICATE OF ANALYSIS

IT Corporation/PPG Natrium
2790 Mosside Blvd.
Monroeville, PA 15146
Attn: Bob Halldin

October 18, 1989

Job Number: P909219

The Certificate of Analysis is for the following:

Client Project ID: 302409
Date Received by Lab: 9/27/89
Number of Samples: Two
Sample Type: Soil

I. Introduction

On September 27, 1989, two soil samples were received at ITAS Pittsburgh, labeled as follows:

MW-118-01
MW-118-02

II. Analytical Results/Methodology

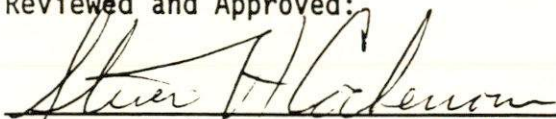
Results are presented in the enclosed table and were determined in accordance with Method 7471, Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition, 1986 (Manual Cold Vapor Technique).

Results are based on sample concentration and expressed in milligrams per kilogram or parts per million. ND denotes that the compound is not detected at or above the indicated detection limit.

III. Quality Control

QA/QC information can be found immediately following the analytical data.

Reviewed and Approved:


Steven H. Cochenour, Project Manager

PPG, Natrium
Date: 10/18/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P909219

Mercury Analysis

Client Sample ID: See Below
Sample Date: 9/26/89
Analysis Date: 9/28; 10/17/89

Client Sample ID:	Mercury mg/Kg
MW-118-01	130/220/1900 *
MW-118-02	0.7
Preparation Blank #1	ND0.1
Preparation Blank #2	ND0.1

Matrix Spike
Percent Recovery

MW-118-01	250%/0% **
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*Due to the nature of the sample (a high concentration of sample versus the small amount needed for analysis) an acceptable percent RSD could not be achieved for the duplicate digestion; therefore, all values obtained are reported. The sample was prepared and analyzed on two separate days.

**The sample concentration was greater than four times the spike concentration.



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CERTIFICATE OF ANALYSIS

IT Corporation/PPG Natrium
2790 Mossdale Blvd.
Monroeville, PA 15146
Attn: Bob Haldin

October 11, 1989

Job Number: P909192

The Certificate of Analysis is for the following:

Client Project ID: 30³/409
Date Received by Lab: 9/22/89
Number of Samples: Seven (7)
Sample Type: Soil

I. Introduction

On September 22, 1989, seven soil samples were received at ITAS Pittsburgh, labeled as follows:

MW-119-01	MW-120-01	SS-1
MW-119-02	MW-120-02	SS-2
		SS-3

II. Analytical Results/Methodology

Results are presented in the enclosed table and were determined in accordance with Method 7471, Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition, 1986. (Manual Cold Vapor Technique)

Results are based on sample concentration and expressed in milligrams per kilogram or parts per million. ND denotes that the compound is not detected at or above the indicated detection limit.

III. Quality Control

QA/QC information can be found immediately following the analytical data.

Reviewed and Approved:

Steven H. Cochenour, Project Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

PPG, Natrium
Date: 10/11/89

IT ANALYTICAL SERVICES
PITTSBURGH, PA

Client Project ID: 302409

Job Number: P909192

Mercury Analysis

Client Sample ID: See Below
Sample Date: 9/20,21,22/89
Analysis Date: 9/27,28/89

Client Sample ID:	Mercury mg/Kg
MW-119-01	130
MW-119-02	0.3
MW-120-01	0.1
MW-120-02	ND0.1
SS-1	90
SS-2	7.1
SS-3	11/10
Preparation Blank #1	ND0.1
Preparation Blank #2 9/27/89)	ND0.1
Preparation Blank #2 9/28/89	ND0.1

Matrix Spike Percent Recovery

SS-3	527%/0% *
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*The sample concentration was greater than four times the spike concentration.